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# PERNICIOUS FEVER.

A CLINICAL STUDY OF THE FEVERS OF RIO DE JANEIRO

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BY

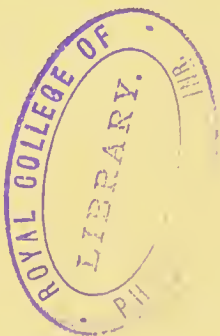
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TRANSLATED BY SURGEON GEORGE P. BRADLEY, U. S. NAVY.

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1894.  
GEORGE S. DAVIS,  
DETROIT, MICH.

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## PREFACE.

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Although originally intended for the special edification of Brazilian physicians and others familiar with the Portuguese language, in which these chapters first appeared, the wide experience and careful deductions of Dr. Homem deserve a record in the English tongue. I have always considered his views most valuable and *practical*, in the correct diagnosis and treatment of a great variety of malarial affections especially, and have derived great benefit therefrom, not only in the tropics, but in this country as well, where, owing to the increased frequency of traveling, etc., ambiguous forms of malarial disease occur, often in non-malarious regions, and are, I believe, often mistaken and consequently mistreated. "Pernicious Fever" comprises the severer forms of these fevers, and those which simulate acute inflammatory diseases. Dr. Wood, of Philadelphia, long ago described from experience "bilious pneumonia" (that is, pneumonic pernicious fever), and yet, oddly enough, included it among other forms of pneumonia, instead of among the miasmatic fevers where it belongs. I am convinced that from such confusion arose the idea of quinine being useful in pneumonia.

Even if the forms of fever herein described were peculiar to South America, the remarkable features that characterize their onset, complications, course and culmination ought to interest medical students everywhere; here is strikingly displayed the advantage—nay, indispensability—of thorough knowledge, scientific method, careful attention to detail, and courageous adherence to the sum of the rational indications, in dealing with disease. But if, as Dr.

## VIII.

Homem declares, "the same ætiological factors which concur to the development of simple fevers, determine the appearance of pernicious fever," the direct bearing of the work on the miasmatic conditions of more northern latitudes becomes apparent. The searchlight of the author's superior knowledge, turned on the complications and fatalities of North American fevers, might penetrate many of the masks which Brazilian records show to be such deadly obstacles to a proper diagnosis and treatment of malarial states.

GEO. P. BRADLEY.

Boston, Mass., May, 1894.



# PERNICIOUS FEVER.

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## I.

It is not very easy to say what is understood by the term "Pernicious Fever" in practical medicine. The most celebrated pyretologists are at variance on the question of the real signification of these two words—many confounding the *perniciousness* of the pyretological species with *malignity*. Castan,\* for instance, says that a pernicious fever or a malignant paroxysm is a quinine fever specially characterized by the immediate danger attending it.

Saint Vel judges pernicious fever to comprehend all febrile paroxysms which offer an exaggerated intensity of the phenomena of intermittent fever, or are complicated by grave symptoms in the chief organs of the body.†

For Dutrouleau, the type and form do not constitute the distinctive characteristics of pernicious fever; its characteristic is the special element of gravity to which has been given the name of perniciousness. The gravity of pernicious fever appears suddenly, and threatens life at once; it is often fatal

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\* *Traité Élémentaire des Fièvres*, page 229.

† *Traité des Maladies des Régions Intertropicales*, p. 79.  
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in the first paroxysm, and very rarely exceeds the third. It is not only the instantaneousness of the peril which constitutes perniciousness; it is also the kind of the phenomenization, which is referred to one single symptom, or to a group of symptoms, independent of the fever proper, and, so to speak, added on to it. If malignant fever is a dog that bites without barking, pernicious fever is a dog that bites and barks at the same time. Pernicious malarial fever is frequently insidious—that is, may be pernicious and malignant at the same time.\*

Pernicious fever, in my way of thinking, is an acute and very grave manifestation of malarial poisoning; as primary, it constitutes the sole disease which attacks the patient, preceded or not preceded by a mild pyrexia; as secondary or consecutive, it is intercalated in the course or at the termination of another morbid entity, and puts the patient's life in immediate peril. When this manifestation of paludism is attended with febrile reaction (pernicious fever properly so called) the type of fever varies, as in simple cases—it is sometimes intermittent, sometimes remittent, sometimes continued; when there is no increase of temperature (pernicious paroxysm) the disease assumes the character of masked fever (*Febre larvada*).

In the one case as in the other, the perniciousness

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\* Dutrouleau: *Traité des Maladies des Européens dans les Pays Chauds*, p. 211.

may consist either in the exaggeration of any one of the three stages of an intermittent paroxysm, complete and simple, or in the appearance of a symptom or a group of symptoms pertaining to an organ or an organic system.

## II.

In spite of the opinion of Morgagni, who dates the first idea of pernicious fever from Hippocrates, it seems beyond doubt that Torti was the first physician to describe this pyretological species. He divides the pernicious symptoms into two classes, corresponding to two very distinct states of the animal economy: that of *colliquation*, and that of *coagulation*.

Grimaud expounds these ideas of Torti, in adapting them to another hypothesis: he considers these same pernicious symptoms as depending, some on a dominant state of *condensation* or *spasm* (coagulation), others on a state of *expansion* or *atony* (colliquation).

Baldinger considers the phenomena by which perniciousness is expressed in fevers, as lesions more or less profound of the chief faculties of vital force.

Alibert attributes them to a lesion more or less profound of the motor-sensory nervous system.

For Dr. Pidoux, perniciousness exists when at the same time one or many special functional disorders manifest themselves (the concomitance of which is not, however, constant or necessary). There is a *rupture of synergies* in the ordinary vital functions, a propensity to *direct vital extinction*, an insidious menace of death.

Dr. Bonnet, of Bordeaux, thus expresses himself in regard to the perniciousness of fevers:

“The name of pernicious fever is given to inter-

mittent fevers the intensity of which is so great and the course so rapid that they terminate fatally at the end of some paroxysms, unless means are employed to combat them.”\*

All these opinions, tainted with the merest vitalism, tend more or less to confound the perniciousness of malarial fevers with malignity, according to the ideas of Barthez. In the one as in the other there is a direct and profound attack upon the vital essence, a destruction of the radical synergies, an imminent danger of death under deceptive appearances not in accord with the reality of the peril.

This confusion clearly and evidently appears in the following words of Pidoux:

“Perniciousness depends rather upon the *pernicious* nature of the *disease* than on that of the pernicious disorders which the affection of an organ whose action is indispensable to the actual preservation of life may produce in the economy. In certain cases of abnormal and intermittent gouty affections, the organs which suffer, and to which the chief symptoms are referred, are doubtless very important centres of life; yet such paroxysms rarely cause death, as the paroxysms of pernicious malarial remittent fever customarily cause it, even when they affect organs less indispensable to life; such are the stomach

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\* Bonnet, de Bordeaux: *Traité des Fièvres Intermittentes*, p. 51.

in the cardialgic pernicious form, the large intestine in the dysenteric, not to mention the ardent and algid, which attack no organ in particular. It is *malignity*, that is, the insidious imminence of speedy dissolution, sometimes even in the absence of fatal symptoms, that constitutes perniciousness, and not the intensity of the functional disturbance of this or that particular organ. The danger to the organism is rather in the profound blow to its vital resistance and its unity, than in the lesion of structure undergone by this or that tissue."

There are authors who regard the nature of perniciousness very differently, who do not believe in this supreme struggle between life compromised in its inmost essence and the morbid cause. Broussais, for example, starting from the assumption that intermittent and remittent fevers are a periodical gastro-enteritis, says that the pernicious differ from others only by the violence and danger of the congestions.

According to Maillot, pernicious fever is nothing but an irritation having for anatomical characteristic a hyperæmia of the nervous matter and its involucri, that is, of the cerebro-spinal axis.\* He thinks, like Broussais, that the pernicious fevers differ from simple intermittents only by the degree of violence of the congestions, or by the importance of the organs upon which these congestions operate.

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\* Maillot: *Traité des Fièvres ou Irritations Cerebro-spinales Intermittentes*, p. 326.



Says Ritschel:

"I do not believe that perniciousness is a characteristic of intermittent fevers carried to the highest degree; I think it depends on complications foreign to the fever itself, arising at the same time or before it. When we say *pernicious* or *sub-continued* fever, the course or termination of the paroxysms is indicated, but not the cause of this course or termination. It would be exact to say an intermittent fever whose paroxysms are multiplied or approximated under the influence of the affection of this or that organ. When the organ is essential to life, when the cessation of its functions necessarily and promptly causes death, the fever is pernicious."\*

Boudin, admitting various degrees in the *dose of malarial poison* in the manifestation of the various types of intermittent fevers, is inclined to attribute the perniciousness of fevers to the *greater quantity of miasma absorbed*.

At the bedside and at the autopsy no physician can embrace any of these theories exclusively: there are cases where the vitalists seem to triumph; others where the victory is on the side of the organicists. The exaggerated localizing ideas of Broussais and his disciples no not deserve at the present day the honor of serious refutation. To appeal always to a direct and profound attack on the essence of life, to

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\* Compendium, tom. v, p. 328.

a destruction of the radical synergies of the organism, is to ignore the numerous instances where organic disorders of a material nature, appreciable during life and verified after death, constitute the perniciousness of one or more paroxysms, and, by their extent as well as by the importance of the organ compromised, carry the patient to the tomb.

Boudin's opinion fails altogether in practice. How is it that, the circumstances of the poisoning being always the same for all, in some benign paroxysms of intermittent fever occur, of quotidian, tertian, or quartan type, etc., and in others a masked fever; in these a bilious remittent fever, in those a pernicious? How explain the different degrees of violence of the disease—so different that here the first pernicious paroxysm is immediately fatal, there, in spite of the lack of suitable medication, a second and a third paroxysm supervene, and only after the latter the patient dies? In the study of a pathological case we ought always to keep in view two factors which are inseparable: on the one side the morbid cause, on the other the patient or the ground upon which the former has to exert its action. Now the cause in the case under consideration remains always the same, unchangeable; if it seems to vary in intensity in certain circumstances, it is because the ground in which it exercises its strength is more propitious, more favorable to it. We must not forget that each physiological individuality carries with it

its personal aptitudes, a particular method of morbid susceptibility. The human being is gifted with a spontaneity and consequently with a variability of impression which outside morbigenic causes cannot explain. We ought then, in cases of pernicious fever, to seek in the conditions of the ground whose quality is so different, and not in the quantity of the seed, the reason which shall explain to us the gravity of the disease.

### III.

Pernicious fever is very frequent at Rio de Janeiro. It assumes numerous and varied forms: now it presents the frank intermittent type, now the remittent, now the continued; it manifests itself as a primary disease, or supervenes in the course or at the end of another morbid entity, especially of the acute inflammations (pneumonia or pleurisy). In many cases the first pernicious paroxysm is preceded by simple ones, well marked, incomplete, or masked; in others, the patient is attacked by a pernicious paroxysm while in the enjoyment of perfect health. A pernicious paroxysm is not always accompanied by febrile reaction; it sometimes coincides with complete apyrexia or with diminution of temperature.

It is not rare to observe a paroxysm of pernicious fever in a patient with malarial cachexia, whether at the height of intensity of this disease, or at the period of perceptible improvement. In the year 1872 there died in the Santa Izabel ward [of the Misericordia Hospital at Rio de Janeiro.—Tr.], victim of a sudoral or diaphoretic pernicious paroxysm, a patient who had come from Maxambomba with very advanced cachexia (*vide* case 7); in 1875, another cachectic patient, coming from Itaguahy, was attacked by an ardent pernicious paroxysm, which carried him off when he was much better of the cachexia, when everything announced a complete recovery (case 38).

The same etiological conditions which concur in the development of simple fevers, determine the appearance of pernicious fever. If many cases of pernicious fever are met with in the great malarial centres, they are observed as well in the heart of the city, assuming the same forms, characterized in the same manner, attended by equal risks, and demanding from the physician equal promptness and energy in the use of therapeutic means. It is in adult life and infancy, in the male sex, in the hot season, especially after a glowing sun succeeds copious showers, that cases of pernicious fever are most frequently observed in Rio de Janeiro.

#### IV.

In the great majority of cases of pernicious fever, one predominant symptom reveals the presence of perniciousness; this symptom becomes noteworthy not only by its extreme intensity, but by its great variability as well—from this proceed the numerous classifications recorded in science.

There is no disease that presents itself under such different aspects as pernicious fever. It assumes all shapes, conceals itself beneath the most unaccustomed and singular masks, and passes through various metamorphoses, always disguising its true identity from the eyes of the inexperienced physician. There is no organ that may not in its turn become the theatre of its travesties; it is not rare to see all the great organic systems compromised at the same time in its violent paroxysms.

From remote eras pyretologists, wishing to furnish the practitioner with the Ariadne's clue to guide him in this interminable maze of varied morbid manifestations, have sought to group in a certain number of categories the varieties which naturally approximate by some common characters. But the multiplicity of new species which have been described since the immortal work of Torti, is a proof of the defectiveness of these classifications.

To demonstrate the impossibility of establishing a methodical classification of the very numerous and



varied forms of pernicious fever, it suffices to present the classifications proposed, since Torti, as types of different groups. By these we see that the authors who wished to form distinct categories were forced, every one, in order to remain in accord with their personal observations, to create several new species. These species have been so multiplied since the last edition of Alibert's book (1820), that they reach to-day a considerable number.

Mercatus admitted six groups of pernicious fever founded upon the alteration of the humors. Casimir Medicus,\* running through in succession the different parts of the body, notes all the periodical symptoms any one of them may present. Torti, without any doubt, was the first to attempt to establish a precise and methodical classification of the different forms which pernicious fever may assume.

He established two great divisions, comprising: one, the forms characterized by the existence of one predominant pernicious symptom, fixing the attention and constituting the whole danger of the disease (*Febres comitatæ*); the other, the forms in which this symptom is replaced by a conjunction of grave phenomena without any single one predominating, the fever tending strongly to be continued (*Febres solitariae, Febres subcontinuae malignantes*).

The first group comprises seven distinct species:

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\* Treatise on Periodical Diseases without Fever.

(1) choleraic, or dysenteric; (2) atrabiliary, hepatic, or hæmorrhagic; (3) cardialgic; (4) diaphoretic; (5) syncopal; (6) algid; (7) lethargic.

In the second group, which is not subdivided, Torti places the pernicious fevers which give rise to no predominant, well defined symptom, and which are attended by very varied phenomena.

Alibert, although he had adopted the bases of classification of the celebrated Modenese physician, added ten more species to the seven admitted by the latter in the group of *comitatæ*, as follows: Soporose; delirious; peri-pneumonic or pleuritic; rheumatic; nephritic; epileptic; convulsive; cephalalgic; dyspnœic; hydrophobic.

He also admits and describes the choleraic or dysenteric, the atrabiliary or hepatic, the cardialgic, diaphoretic, syncopal, and algid, of Torti (sixteen species), and says in terminating his classification:

“It would have been easy for me to establish yet a multitude of other varieties of ataxic intermittent fever—for example, that variety the paroxysms of which are specially characterized by spitting of blood from the chest; another, in which the patient expels blood from the stomach by means of vomiting; another, in which he suffers great pain in the abdomen; another, in which the limbs frequently experience twitchings or partial contractions; another, characterized by paralysis, appearing only during the paroxysms, etc.—but it suffices to indicate them to the

practitioner, who must always be very attentive in his endeavor to discover the innumerable metamorphoses of which these affections are susceptible."

Maillot, in view of the increasing multiplicity of new species, tried to approximate all the morbid individualities by means of anatomical and symptomalogical analogies; and, starting from this principle, he established three groups, in accordance with the course of the phenomena:

*First*, of the cerebro-spinal system—comatose, delirious, tetanic, epileptic, hydrophobic, cataleptic, convulsive, and paralytic forms; *Second*, of the thoracic organs—syncopal, cardiac, pneumonic, pleuritic forms; *Third* and last, of the abdominal organs—the gastralgic, choleraic, icteric, hepatic, splenic, dysenteric, and peritoneal forms.

Haspel adopts Maillot's classification, but judges it to be incomplete because it comprises only the cases of pernicious fever with organic lesion, real or apparent; he therefore adds two more forms, the algid and diaphoretic.

He does not attach great importance to classifications, and expresses himself very positively as regards this:

"We attach to these purely formal distinctions only a secondary value, because they seem to us very artificial and insufficient to embrace all the cases occurring in practice; because ordinarily many of these forms present themselves at the same time or in suc-

cession in the same person; because there are pernicious fevers without any predominant symptom; and finally, because nature knows how to vary infinitely its pathological types.”\*

Haspel indeed is right. What is the real value of these classifications, divisions, and subdivisions? What indication do they furnish for prognosis and treatment? None. The prognosis is dependent on the pernicious nature of the disease, and not on the form it assumes. The treatment should be inspired by the basis and gravity of the affection, and the indications furnished by the form are secondary. The partisans of classification maintain that it clears up the diagnosis and makes more prominent the therapeutic indications, according to this or that group of symptoms. But the radical differences which separate, as to the secondary indications drawn from the form of disease, two pernicious paroxysms, to all appearance with identical manifestations, are a permanent obstacle to the realization of the second desideratum. In reality, to mark out invariable therapeutic rules according to the symptomatic form of a pernicious fever, is to run the risk of advising the same means in two cases apparently alike, but very distinct after being subjected to a rigorous and unprejudiced clinical analysis.

Even as regards diagnosis, the clinging to classi-

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\* Haspel: *Maladies de l'Algérie*.

fications of the varying forms of pernicious fever has its inconveniences, and at times very grave ones. However numerous, varied and minute these classifications may be, they will never embrace all the cases which may be met with in practice. Almost every day a new form is made known, not yet recognized and classified. Now if the physician, not finding in the classification he adopts the new example arising before his notice, forbears recourse to the heroic means which should save his patient, he sacrifices him irremediably with a clear conscience, because he does not recognize the peril surrounding him.

This is why I, excluding none of the classifications latterly admitted, adopt none to the exclusion of others; all are good when the cases observed can be conveniently included in their divisions and subdivisions; there is not one which is of service in the complex, undefined, unusual cases, and in those marked by a variety of symptoms—and these cases are sometimes seen in Rio de Janeiro.

I have observed in ten years (1866-75) sixty-eight cases of pernicious fever—thirty-one in the wards of the hospital, fifteen in the infirmary of Nossa Senhora da Ajuda, and twenty-two in private practice. From the notes and case-papers which serve me as a guide in the study of the present chapter, it appears that the forms assumed by the disease in these cases were the following, in order of frequency: Algid, eleven cases; comatose, nine; cerebro-meningeal, five;

convulsive, four; neuralgic, four; delirious, three; sudoral, three; pleuro-pneumonic, three; ardent, two; hæmoptoic, two; choleraic, two; rheumatic, two; peritoneal, two; gastralgic, two; tetanic, one; epileptic, one; asthmatic, one; syncopal, one; hydrophobic, one; paralytic, one; hepatalgic, one; aphasic, one; indefinite, six.

In the six cases in which the form of the paroxysms can be referred to none of the divisions recognized in pathology, there was a mixture of symptoms furnished by the various organs or organic systems, which appeared irregularly in the course of the disease.

From the table of statistics here set forth, and which sprang from my own observation, it may be deduced that the algid, comatose and cerebro-meningeal forms are the most frequent in Rio de Janeiro; the first especially predominates the others very sensibly. Consulting in this regard the opinion of several well known physicians who have an extensive practice in this city, they are unanimous in considering the algid form as the commonest of the forms of pernicious fever observed in practice; they agree also as regards the frequency of the comatose form, and the rank due to it in our statistical charts."

According to my way of thinking, one or many grave symptoms, furnished by an organ or a system of organs, attended or not by febrile reaction, whatever may be the type of fever, may constitute a pernicious paroxysm.



Algidity is a frequent termination of many pernicious attacks, whatever be the form to which they belong. Dr. Dutrouleau very justly says:

“The algid state appears to be the most legitimate expression of the action of the malarial cause upon the human organism, and is perhaps the pathological centre whither converge the other pernicious species; hence it follows that it should appear alone in many cases, and that in others where it has been disguised it will reappear as soon as the special symptoms of these fevers have been modified. The truth is that algid fever exists everywhere as a pernicious species, and the algid state is the most frequent complication or termination in fatal cases of pernicious fever, whatever may be their form.”

In the opinion of some physicians of Rio de Janeiro, prominent among them the respected and distinguished Baron de Lavradio, a species of lymphatitis which prevails in this city and is attended by excessively grave ataxic symptoms constitutes a form of pernicious fever, which they term lymphatic.

These practitioners believe that the local phenomena, usually of little severity, as well as the general, almost always very serious, depend on a malarial miasmatic poison, which must be combated energetically and perseveringly by the salts of quinine.

In 1874 a young candidate for a degree defended this opinion with much talent in his inaugural thesis,

which is without doubt the best notice we have of this subject.\*

For a long time I have been a declared opponent of this view, both in my lectures at the medical school and in some articles written at the request of my pupils and included in their theses, as well as at the bedside. The serious lymphatitis observed here, and which at times appears in little epidemics, is caused either by some one of the local conditions which usually excite inflammation of the lymphatic vessels, or by a general poisoning of the system produced by the mephitic emanations originating in the great centres of organic matter in a state of putrefaction. Whether in the one case or the other, the entry into the current of circulation of lymph altered in consequence of the inflammation of its containing vessels, produces a change in the blood (lymphæmia) which gives rise to the ataxic symptoms constituting the entire gravity of the disease. When the lymphatitis is caused by mephitism—*i. e.*, when it is the symptomatic expression of a phytozæmia—the sulphate of quinine, given at the very beginning, gives good results, as we observe in all pathological cases due to such causes, whether vegetable, animal, or mixed. The patient recovers—the primary poison is neutralized; but if lymphæmia is established, either because the quinine

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\* Dr. Carlos Claudio da Silva: Das Lymphatites Perniciosas que reíñao no Rio de Janeiro.

salts were administered too late or in insufficient doses, or because the lesion of the lymphatic vessels has become general and profound, the quinine medication, far from being of advantage, becomes on the contrary very harmful, because it aggravates the ataxia and favors the appearance of adynamia. In this stage of the disease, tonics, antispasmodics and diffusible stimulants are alone of benefit, the only remedies in which the physician should place any confidence. Observation, then, demonstrates that in the pernicious lymphatitis of Rio de Janeiro the sulphate of quinine is contra-indicated as soon as the symptoms constituting the perniciousness of the disease appear. In the pernicious fevers it is exactly the reverse; as we shall see further on, the graver the symptoms indicating perniciousness, of whatever nature they be, the larger should be the doses of the salts of quinine, and the more prompt and evident are the triumphs of this medication.

If the lymphatitis in question were a pernicious form of malarial poisoning, it would be frequently observed in the localities where miasmatic affections are endemic, in the great centres of infection, where the forms of pernicious fever are numerous and varied. Nevertheless, whether in foreign countries where there are epidemics and endemics of malarial affections, or at certain points in the interior of the province of Rio de Janeiro, where sulphate of quinine is an indispensable remedy in the treatment of every disease, malig-

nant lymphatitis, with the characteristics distinguishing it here in the city and making it almost always fatal, is entirely unknown. Can we allow that the lymphatic form of pernicious fever is peculiar to the city of Rio de Janeiro; that it has never manifested itself in other localities; that the most renowned pyretologists have never noticed it; that it does not figure in any of the recognized classifications? Assuredly not.

At the season when the grave lymphatitis is observed with us, few cases occur of pernicious fevers, and above all, of simple intermittent. Now, to admit a malarial poison revealing its existence in the lymphatic system, we should be compelled to admit also a special predilection of this poison for certain determined epochs, exactly when it avoids the organs it most commonly attacks—which is an absurdity.

The pernicious fevers, whatever may be the group to which they belong, whatever even may be the species observed, present such a noteworthy diversity, such an unusual lack of harmony between the symptoms which denote them, that to recognize a first paroxysm, in cases where no attacks of simple intermittent fever have preceded, the practitioner must be very sagacious and experienced. In the numerous cases of grave lymphatitis I have observed, terminating fatally for the most part, after the second or third day of the disease, sometimes later, nervous ataxic phenomena occur, always the same, which grow worse

gradually and progressively until the patient succumbs. The less intense the local symptoms are, the more migratory and erratic the inflammation of the lymphatics, the graver are the general symptoms, the more profound the ataxia of the nervous system. If the local condition were the symptomatic expression of a pernicious attack, would not the phenomena indicative of the perniciousness of the disease be observed from the first day? Certainly they would. Does not the appearance of these phenomena at a time posterior to the lymphatitis, clearly indicate that they are consecutive to that lymphatitis, that they do not depend upon the same cause that produced it? Without doubt; all the more since no one disputes that traumatism, of whatever nature, provoking inflammation of the lymphatic vessels, the supervening lymphatitis as well is followed by the gravest symptoms of ataxia, unless terminated by suppuration. These are the reasons which lead me not to admit that the morbid process in question is a pernicious form of malarial poisoning.

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## V.

When a pernicious attack supervenes after a certain number of simple intermittent paroxysms, the latter at times keep getting graver until true perniciousness appears; again, the paroxysms, which were complete and regular, become incomplete, anomalous, and insidious; there are cases in which the pernicious paroxysm explodes without any anterior phenomenon indicating it, without the physician being able to foresee it; there are cases in which the malarial poison manifests itself at once by a very grave paroxysm, with no preceding simple attacks; cases in which this first paroxysm is so violent that it kills the patient in a few hours.

Pernicious fever presents no phenomenon worthy of note as regards febrile heat, appreciated by the thermometer. The thermometer does not lend the physician the least assistance in this group of pyrexias; it will hardly indicate, as in benign cases, what the type of fever is.

One of my most remarkable pupils, writing in 1875 his inaugural thesis on the value of the thermometer in the diagnosis of the fevers which prevail in Rio de Janeiro, recorded in this splendid and conscientious work the fruit of his minute and careful investigations. In spite of his brilliant talents, and the efforts he made to arrive at some positive and satis-



factory result, he expresses himself in the following manner:

“While the pernicious pyrexias are those which most demand of the practitioner a prompt diagnosis, for the employment of vigorous and exact treatment, they are also those in which the thermometer possesses least value.”\*

In the so-called ardent species, admitted by Dutrouleau and other practitioners as a distinct form, the excessive elevation of the thermometer ( $106^{\circ}$ – $107.4^{\circ}$ – $107.8^{\circ}$ ) will serve for the admission of this form in case of previous diagnosis of malarial fever. This occurred to the hospital patient in 1875 who died of an ardent pernicious paroxysm supervening in the course of malarial cachexia. This patient was much better, and about to leave the hospital, when the interne on duty found him at eight o'clock in the morning with a temperature of  $106.1^{\circ}$ , although the evening before he was apyretic and doing well. There being no lesion to explain so violent a febrile reaction, the general symptoms which accompany the prodromic fever of the exanthemata not being present, and it being a case of a person coming from Itaguahy with malarial cachexia, the diagnosis of ardent pernicious fever offered no difficulty. At five o'clock in the

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\* Dr. Domingos de Almeida Martins Costa: *Do Valor das Investigacoes Thermometricas no Diagnostico, Prognostico e Tratamento das Pyrexias que Reinão no Rio de Janeiro* (1875), p. 39.



evening the temperature reached  $107.3^{\circ}$ , and at two the following morning the patient died. The autopsy demonstrated existence of the visceral lesions produced by malarial poisoning.

In the algid form, attended or not by profuse sweating, the thermometer reveals a temperature very near the normal or a little above, and in this latter case thermic exploration explains the internal sensation of intense heat experienced by the patient, obliging him to keep uncovered.

## VI.

In the *algid* pernicious fever, the most frequently observed with us, sometimes a few shiverings occur at the beginning of the attack, sometimes a slight chill, and sometimes the initial stage of the paroxysm is entirely lacking; the symptoms of algidity, in a large number of cases, supervene insidiously. The patient's face grows pale, his features are contracted, cheeks hollowed; his eyes are sunken, sight darkened, pupils dilated; the lips become livid, the voice weak, low, tremulous and sepulchral; the skin, especially at the extremities, goes on cooling gradually until it becomes icy; when the algidity has invaded the entire skin, a clammy sweat appears, drenching the patient; and it is in this case that the observer's hand, applied to any region of the algid body, especially to the forehead, nose, and upper or lower extremities, experiences a very unpleasant sensation, like that experienced on touching marble or a corpse.

The patient complains of burning heat consuming him inwardly, is very thirsty and begs urgently for water; the pulse is very concentrated and rapid (125 to 135 per minute); the axillary temperature taken by the thermometer is  $99.5^{\circ}$ ,  $101.5^{\circ}$ ,  $101.2^{\circ}$ , rarely  $97.8^{\circ}$  when the paroxysm is about to terminate fatally. The tongue becomes cold, retracted, and a little tremulous, the epigastrium and hypochondria painful, the belly

tympanitic, and the urine is suppressed. Respiration, which at the beginning of the paroxysm appears natural, becomes later difficult, oppressive, uneasy, attended with deep sighs. In the midst of all this array of symptoms, when life is ready at any moment to be extinguished, the intelligence preserves its normal integrity; the patient, overcome by sad apprehensions, considers himself lost, bewails his situation, but is not delirious.

If the paroxysm ends fatally, the symptoms I have just described increase, the diaphoresis becomes profuse, the patient's face becomes hippocratic, the heart is enfeebled to such a degree that its beat is hardly perceptible, the pulse becomes thready and extremely rapid, the voice almost extinguished, and life ceases suddenly from cessation of the heart's action.

If the paroxysm is to pass off, even though another supervene, the circulation grows active, heat little by little is distributed regularly over the whole body, the pulse grows stronger and less frequent and contracted, the face becomes more flushed, the look more expressive, the urine reappears abundantly, the belly becomes flaccid and painless, and at the end of a few hours the patient recovers a certain degree of comfort, scarcely interrupted by the sensation of extreme weakness which he feels, and which lasts for many days, even when radical cure is impending. If a second paroxysm is to follow, the prostration in

which the patient is left after the first is very marked; his physiognomy still expresses discouragement and terror; the pulse, albeit fuller, stronger, and less compressible, yet keeps a certain frequency which inspires suspicion; the tongue is covered with white fur; the liver is congested and painful, and the spleen as well.

In one of the cases observed by me in hospital practice, in spite of the flattering condition of the patient after a first algid pernicious paroxysm, an intense pain was noted in the left hypochondrium, without increase of volume of the spleen (splenalgia), which led me to presume that another attack would appear. In fact, despite the vigorous treatment employed, my presumption was changed to reality; the second attack supervened, less grave and threatening than the former, it is true, but attended with one peculiarity that disheartened me—the patient vomited all he swallowed; it was then impossible to give him quinine and other remedies by the stomach. I had recourse to the endermic method, to enemata, and to frictions, and, thanks to these means of absorption, succeeded in saving him.

In the *choleraic* and *dysenteric* forms, species of the algid genus, the same phenomena of alidity are noted, more or less marked, especially in the former; besides these phenomena, others appear, identical with those of Asiatic cholera or severe dysentery. In the first instance, together with the choleraic alidity,

vomiting and diarrhœa are observed, repeated frequently and abundantly; the matters expelled from the stomach and bowels are riziform; there is cyanosis, the skin loses its normal elasticity, cramps appear, the face becomes hippocratic, the urine is suppressed, and the unhappy patient is reduced to the state of a moribund in a few hours.

The identity of the symptoms of a pernicious paroxysm of the choleraic form and those of true cholera is oftentimes such that the differential diagnosis between the two diseases will be impossible if we have for basis only the nature and intensity of the symptoms themselves. It is in the previous history of the patient, in the course followed by the morbid phenomena, in the very important circumstance of the absence of a cholera epidemic, and in the state of the liver and spleen, that the physician will find sufficient light to guide him.

In the *dysenteric* form, there is either a pronounced lowering of bodily temperature, or well marked febrile reaction, which is very common at the onset of the disease. With the cooling of the extremities, or with the febrile heat, coincide the symptoms of a serious dysentery. There are catarrhal, bloody, frothy, and fetid evacuations; these evacuations are very frequently repeated, and are preceded and accompanied by violent colic and severe tenesmus; every time the patient seeks the stool he expels a small amount of fluid, becomes weaker, loses cour-

age; and is often attacked by faintness, vertigo, and even syncope.

In this form the liver usually becomes much enlarged, and the right hypochondrium grows tense, prominent, and painful. The dysenteric form of pernicious fever is very rare at Rio de Janeiro. It appears from the statistics presented that in ten years I did not chance to observe a single case.

The *sudoral* form is at times combined with the algid, and only differs from it because the diaphoresis manifested during the paroxysm is so copious that the patient's garments, pillows, blankets, and the mattresses of the bed are completely inundated; there are cases in which the perspiration wets the floor of the room. At other times the profuse perspiration does not coincide with algidity; on the contrary, though the patient sweats excessively, the thermometer indicates increase of heat, and the surface of the body remains hot; the sweat, instead of being cold and clammy (as happens when there is algidity), shares the heat of the skin.

If the patient, in this condition, does not change his linen with due care, if he is not shielded from draughts, the evaporation of the sweat which bathes his skin, depriving the latter of a great amount of its heat, causes a very unpleasant sensation of cold, and may excite a general chill nearly approaching algidity.

Many celebrated pyretologists claim that the algid and sudoral or diaphoretic forms of pernicious



fever consist in the exaggeration of the first and third stages of a simple intermittent paroxysm, just as the ardent form is the exaggeration of the second.

*Case 1.*—Adriano, Portuguese, thirty-two years old, a mason's servant, living in the Rua de Don Manuel, entered the Santa Izabel ward [in the Mizericordia Hospital at Rio de Janeiro] on the 2d August, 1868, and occupied bed No. 9. For a week he had daily paroxysms of intermittent fever, characterized by the three stages, and a facial neuralgia, appearing regularly at 1 P.M. and ending at 7 P.M. A purgative of castor oil, taken on the night of the 29th July, and some pills, probably of sulphate of quinine, prescribed by an apothecary, were the only curative means adopted by the patient. Having entered at 9 o'clock at night, the physician on duty prescribed one gramme of sulphate of quinine, a mixture of sulphuric ether and tincture of valerian, and sinapisms to the lower extremities.

August 3d. *Present condition:* Dorsal decubitus; expression disturbed, evincing anxiety and terror; voice weak and muffled; algidity very marked in all parts of body except chest, where there is some warmth; in extremities, upper and lower, nose, ears, and chin, greater cooling noted than at other points of skin. Forehead, chest, and forearms bathed in fetid and clammy sweat. Pulse small, compressible, 120; respiration uneasy and frequent (28); absence of physical signs on auscultation and percussion of thorax; intense thirst; tongue cool and furred; breath cold; pain in epigastrium and hepatic region; liver a little enlarged; spleen normal; belly retracted; no diarrhoea or vomiting; urine scanty, high-colored, and turbid; mind clear.



- R Hydrolate of canella, 180 grammes.  
Bisulphate of quinine, 2 grammes.  
Carbonate of ammonia, 1 gramme.  
Elixir of paregoric, 8 grammes.  
Syrup of gum Arabic, 30 grammes.  
Essence of peppermint, 4 drops.

Take two tablespoonfuls every hour.

Two clysters of sulphate of quinine, of 6 deci-grammes each. Sinapisms to upper and lower extremities. Two broths with rich wine.

At 5 P.M. patient was better: more warmth in extremities, sweating had ceased, face more flushed, and pulse fuller. The two clysters had been retained. The patient presented the acoustic symptoms of well marked cinchonism. He continued to take wine alone, a tablespoonful every two hours, till the following day.

August 4th. Face more flushed; respiration easier; still coolness of extremities, especially of upper, but much less than day before; pulse fuller, 112; little thirst; tongue more coated, but temperature normal; less sensitiveness in gastro-hepatic region; liver still enlarged; constipation; urine more abundant, and still with sediment. Intense neuralgic pain in right side of face.

- R Valerianate of quinine, 2 grammes.  
Ext. hyoscyamus, 0.20 gramme.  
Ext. thebaic,\* 0.10 gramme.  
Soft ext. cinchona, 0.60 gramme.

Div. in pil. xij. Take one every two hours, and with each pil two tablespoonfuls of *Agua Ingleza*.†

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\* Opium 1 part, distilled water 12 parts, to make soft extract.

† [Agua Ingleza, or Agua de Inglaterra, a proprietary remedy much used in Brazil, is the property of a Portuguese family named Castro; it is a mixture of cinchona bark with the must of grapes, and the compound fermented.]

A purgative enema, and after its action two enemata of sulphate of quinine, each of 0.60 gramme. Three broths with good wine.

August 5th. Marked improvement. Perfect distribution of surface warmth; pulse 92 and fuller. Appetite good. Patient purged largely by enema; retained quinine enemata, and had taken eight pills to hour of visit. Deafness of cinchonism well marked. Neuralgic pain much decreased in intensity; liver less enlarged; urine abundant and normal.

Prescribed: Four pills quinine valerianate; Agua de Inglaterra; anodyne liniment to foment right side of face; two broths with wine; half a cup of coffee.

From the 6th the patient was kept wholly on the Agua de Inglaterra; on the 12th he was discharged perfectly cured.

*Case 2.*—José Lopes Curvello, Portuguese, aged nineteen, turner's apprentice, entered bed No. 20 of Santa Izabel ward on the 13th of July, 1875, affected with a severe bronchitis.

On the 23d, when he was almost cured, and hardly coughed a little in the early morning, he was seized at 6 A.M. with marked chilliness, and at the 9 o'clock visit was found in the following condition: Great prostration, labored respiration, uneasiness, restlessness; algidity of upper and lower extremities, no perspiration; pulse 110, small and hard; axillary temperature  $38.6^{\circ}$  ( $101.5^{\circ}$  F.); tongue cold, and thinly coated at base; pain in lower part of left hypochondrium, excited by pressure beneath false ribs; liver and spleen normal; constipation; suppression of urine. No sign on percussion and auscultation of respiratory and circulatory organs.

Ordered: One gramme of sulphate of quinine at

once, same dose to be repeated four hours after; a diffusible stimulant mixture composed of ether, tincture of valerian, canella, and musk; sinapisms to upper and lower extremities; broth and rich wine.

At 5 P.M. the grave symptoms of the algid attack had disappeared; patient had urinated freely at 3 P.M., and the urine contained a little albumen.

On the 24th, at the visiting hour, were observed merely an increased coating of tongue and persistent constipation. Ordered: 12 decigrammes of sulphate of quinine in two doses; stimulant mixture continued, at longer intervals; a purgative enema of castor oil and the electuary of senna; broth, wine, etc.

The doses of quinine were diminished gradually during the following days, and the patient was discharged on the 29th.

*Case 3.*—Luiz Gomes Pereira, Portuguese, aged twenty-eight, employé in the brewery of the Rua da Guarda-Velha, entered Santa Izabel ward on the 9th August, 1874, bed No. 3. He had been attacked by a febrile paroxysm on the morning of the 7th, characterized by intense chill, fever and sweat, with the occurrence at the same time of great pain in the knees, without swelling of these articulations.

He took no remedy, and on the 8th felt well, merely retaining a bitterness in the mouth and loss of appetite. Early on the morning of the 9th, was awakened by a second chill, attended by the same articular pains, by acute pain in the region of the liver, and by vomiting. At 7 A.M. the physician called to see the patient considered him to be in a very serious condition, and advised him to enter the hospital, where he arrived in a hammock a little before 10 o'clock.

*Condition on arrival:* Face hippocratic; profound

adynamia; complete prostration; voice weak, like that of cholera patients; general algidity, profuse clammy sweat bathing the whole surface—the hand applied on any part of the body experiences the same sensation as if it touched a wet corpse. Axillary temperature  $35.8^{\circ}$  ( $96.5^{\circ}$  F.); pulse 132, thready; tongue cold and dry; breath cold; devouring thirst; the patient complains of a burning sensation seated in the epigastrium, and constantly uncovers himself; acute pain in hepatic region—pressure and percussion in this part extort groans from the sufferer; no vomiting or diarrhœa—the patient only vomited when he had the chill at 4 in the morning; liver a little enlarged; spleen normal. Hiccough from time to time. Urine suppressed from beginning of paroxysm; bladder entirely empty. Respiration frequent, labored, interrupted by deep sighs. Pain in knee-joints, without swelling or reddening of skin, excited specially by passive or active movement of the same.

℞ Sulphate of quinine, 2 grammes.  
Valerianate of quinine, 1 gramme.

Mix, and divide into three equal doses. Take one every three hours in a wineglass of Agua de Inglaterra.

℞ Carbonate of ammonia, 1 gramme.  
Tincture of canella, 4 grammes.  
Paregoric, 8 grammes.  
Ethereal tincture of phosphorus, 10 drops.  
Peppermint-water, 120 grammes.  
Syrup of orange-peel, 30 grammes.

A tablespoonful every hour.

Sinapisms to the thighs, legs, feet, arms, and fore-arms.

This energetic treatment was regularly followed under the superintendence of eight pupils, who visited

the patient hourly in details of two, until 3 P.M., when death occurred, there not having been time to give the third dose of quinine.

*Autopsy* (eighteen hours after death): Rigor mortis very marked. Injection of arachnoid; some punctation in the white substance of the cerebral hemispheres. Congestion of base of both lungs. Heart bleached without appreciable lesion. Some greenish fluid in stomach; hyperæmia of mucous membrane of this organ. Liver increased in size, turgid with blood, of a deep red color. Spleen much softened, and of natural size. One ounce of muddy urine in bladder. Kidneys normal.

*Case 4.*—Julio Boutty, Frenchman, journeyman watchmaker, entered the hospital of Nossa Senhora d'Ajuda on the 21st of September, 1873. From the 17th he had begun to lose appetite, have headache, and feel prostrated during the night. On the 20th, at 6 P.M., had a severe chill, followed by fever and sweating; took three Dehaut's purgative pills, and dieted. On the 21st at 7 P.M. had a second chill, attended with great præcordial oppression, and followed by uneasiness and indefinable general malaise; these symptoms becoming more and more aggravated, at 10 o'clock he came to the hospital. He was ordered a stimulant draught, 2 grammes of sulphate of quinine in two doses, sinapisms to the extremities, and a purgative and antispasmodic enema.

*Condition on Sept. 22d, 11 a.m.:* Face profoundly changed, and bathed in cold and clammy sweat; great agitation, the patient moving about constantly in bed, always changing his position and uttering deep sighs. General algidity, only on the forehead some warmth noted; axillary temperature  $37.4^{\circ}$  ( $99.3^{\circ}$  F.); pulse

110 and small. Tongue cold and much furred; great thirst and anorexia. Epigastric pain, increased by palpation. Vomiting, which had appeared after swallowing the second dose of quinine, is excited whenever the stomach receives remedies or broth. Liver a little larger than normal; spleen within its physiological limits; belly meteorized. Two large evacuations were induced by the enema of the evening before. Urine scanty and high-colored, without albumen. Respiratory system sound.

Prescription: Murray's liquid magnesia with elixir of paregoric,\* sulphuric ether and tincture of nuxvomica, in spoonful doses; sinapisms to epigastrium and extremities; three small enemata containing each one gramme sulphate of quinine, to be given three hours apart; broth and wine.

At 7 P.M. the vomiting had completely ceased, algidity and agitation less pronounced, temperature  $37.6^{\circ}$  ( $99.6^{\circ}$  F.), pulse 110. The interne on duty repeated the two last enemata, adding to each 15 drops of Sydenham's laudanum, as the others had been expelled as soon as given. The patient continued to take Port wine.

Sept. 23d. No vomiting; warmth reestablished in all parts except hands and forearms. Axillary temperature  $37.6^{\circ}$  ( $99.6^{\circ}$  F.); pulse 100. Tongue still coated, of normal temperature. Had a large evacuation at 6 A.M. No deafness of cinchonism.

Ordered: Three small enemata containing each 6

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\* [Extract opium, }  
Acid benzoic, } ää 3 grammes.  
Ol. anise volat., }  
Camphor, 2 grammes.  
Alcohol ( $60^{\circ}$ ), 650 grammes.]



decigrammes of sulphate of quinine and 10 drops of laudanum (to be given three hours apart); the same mixture as taken on the 22d, alternating with wine; stimulant friction, with camphorated alcohol, of upper and lower limbs.

The patient showed great improvement on the 24th, and kept on recovering gradually, being discharged on the 4th October. The doses of quinine were diminished progressively till the 27th September, when they were entirely suspended.

*Case 5.*—Ricardo, mulatto slave, joiner, was brought to Mizericordia Hospital on the 7th of July, 1869, and placed in an isolated room, because the physician who had seen him in his master's house diagnosed cholera. Being on duty in the clinical lecture-room, I was invited by the director of the sanitary service to see the patient. I went to the room, attended by the students, and here the following history was elicited: Ricardo was subject to attacks of erysipelas, and had elephantiasis of the leg; had suffered from intermittent fever during February and March of the same year, contracted in the town of Estrella. Some days before the appearance of the serious symptoms observed he was attacked by rheumatoid pains in the legs, and at the resting time allowed the workmen (from noon to 2 o'clock) he went to lie down. On June 6th, at midday, he took a Le Roy's cathartic, and at 5 in the afternoon ate two oranges. At 10 P.M. had a violent chill, followed by vomiting and profuse diarrhœa. At 6 the following morning (7th) cramps and hiccough appeared.

*Condition on arrival:* Face altered in expression; eyes deeply sunk in the sockets; voice low, stifled and wearied; absence of elasticity in the skin, dents re-



maining on pressure; complete algidity; very painful cramps in the legs; pulse 120, very small and hard; tongue cold and furred; devouring thirst; frequent vomiting, excited whenever patient drinks water; profuse diarrhœa. The patient arrived at 9 in the morning, and at 10 had already had two evacuations; the matter evacuated consisted of a serous fluid tinged with bile; no rice-water evacuations or vomiting; liver and spleen enlarged, the right as well as left hypochondrium sensitive to pressure; belly retracted and tense; urine very scanty, without albumen; intellect unimpaired, as is also the respiratory system.

After hearing the history and examining the patient, I diagnosed a choleraic pernicious fever. I named twelve students to examine the patient, one each hour, and took charge of his treatment at the request of the director of the hospital.

℞ Bisulphate of quinine, 2 grammes.  
Ext. opium, 0.15 gramme.  
Essence peppermint, 6 drops.  
Syrup of ether, 30 grammes.  
Canella-water, 90 grammes.

A tablespoonful every hour.

℞ Bisulphate of quinine, 2 grammes.  
Sydenham's laudanum, 2 grammes.  
Infusion of flaxseed, 250 grammes.  
Whites of two eggs.

For four enemata. One every two hours.

Sinapisms to upper and lower extremities and epigastrium. Frequent friction over the whole body with a mixture of tincture of valerian, tincture of mustard, and ethereal tincture of phosphorus.

At 5 P.M. I found the patient better. The evacuations had lessened a good deal, and vomiting and

cramps had ceased; the alidity continued, but was less marked in trunk and face; on the side of the face and skin the symptoms persisted in the same degree. The last enema had been given shortly before, and the mixture was not yet finished; the friction had been made four times by the students. In place of the mixture after it was exhausted, I ordered 120 grammes of good Port.

July 8th. Reappearance of vomiting and increase of diarrhœa; the alidity, even in the extremities, is less; frequent hiccoughs supervened in the morning, and still persisted at the visiting hour (8.30 A.M.). The other symptoms remained the same; pulse 108. Ordered same medication as the evening before; also a small blister to epigastrium.

July 9th. I am informed by the internes, and by the students designated to visit the patient every hour, that he improved sensibly from 3 P.M. on. During the night he continued the use of the mixture, but at longer intervals between the doses. At the visiting hour the improvement was more satisfactory; all the symptoms were less intense; the vomiting, diarrhœa, and hiccough had entirely disappeared. Only in the upper extremities, which were kept uncovered, was any lowering of temperature noted; pulse 96; voice clearer and more resonant; the skin had recovered in part its normal elasticity; tongue still furred; slight thirst; liver and spleen increased in size; abdomen more flaccid; urine more abundant and high-colored, no albumen. Ordered same mixture, with 1 gramme only of sulphate of quinine, and 5 centigrammes extract of opium; same enemata with 3 decigrammes of sulphate of quinine each, and 4 drops laudanum; two frictions per day with same mixture; two mutton broths with Port wine, very hot coffee.

July 10th. Improvement progressing. The second broth excited vomiting, which ceased spontaneously. Face more flushed; eyes still sunken; voice stronger and intelligible; temperature normal; pulse 92 and fuller; tongue hardly furred at base; slight thirst; abdomen flaccid. Two evacuations in twenty-four hours. Liver a little enlarged; spleen normal; urine *extraordinarily abundant*, color normal. Deafness of cinchonism. Ordered 6 decigrammes of sulphate of quinine in coffee; rich Port wine, 120 grammes in teaspoonful doses; two frictions per day; meat broth, coffee.

From the 11th on, the hourly visits by the medical students ceased, as the patient progressively improved. He took sulphate of quinine to the 13th (3 decigrammes the last two days). Left hospital on the 24th.

*Case 6.*—Senhora D. M——, aged thirty-five, married, mother of four children, nursing the last, ten months of age, residing in the Rua da Floresta, in Catumby, was attacked by a violent chill two hours after breakfast, in March, 1870. She vomited copiously, had very intense colic, and whenever the attacks of colic appeared her hands and feet grew cold. Her brother, who was then a student of medicine of the sixth year, believing it an indigestion, prescribed a mixture containing tincture of chamomile and nuxvomica, and a purgative enema containing castor oil and electuary of senna.

At 9 P.M., thinking her condition very serious, he came to ask me to see her. I transcribe notes made on this first visit: Physiognomy indicating great prostration and dejection; the patient is convinced she will die, and bewails her lot in piteous phrases, but

with a wearied, husky voice. Violent cramps; complete alidity of entire body; pulse so frequent, small, and wiry that it was impossible for me to count the number of pulsations; tongue large, moist, and rose-red; devouring thirst; frequent vomiting, spontaneous or excited by swallowing any sort of fluid; abdomen painless everywhere; frequent and profuse diarrhœa; the patient had had in three hours seven evacuations, always preceded by colic, which ceased as soon as the desire to purge was satisfied; the first two stools excited by the purgative enema were fæcal, the others wholly serous. The extreme debility of the patient did not allow her to seek the close-stool, and the evacuations were passed in bed. There was no congestion of spleen or liver. The urine was not examined, as the patient had urinated when she had the first dejection.

Sinapisms to the extremities; hot-water bottles round the body; stimulant and aromatic frictions; diffusible stimulant mixtures with full doses of opium; ether capsules; wine; enemata of sulphate of quinine; tincture of valerian and musk—such were the means successively or simultaneously employed and administered by my own hands until 2 o'clock in the morning, without the slightest benefit. At 3.15 A.M. the patient expired. The paroxysm lasted ten hours.

*Case 7.*—Antonio Villares, Portuguese, aged forty-eight, resident of Maxambomba, where he was engaged in agriculture, entered the Santa Izabel ward on the 1st of June, 1872, with all the symptoms of malarial cachexia and paroxysms of quotidian intermittent fever. Despite the large doses of sulphate and valerianate of quinine which he took, the paroxysms appeared regularly on the 2d, 3d, 4th, 5th, and 6th,

characterized by the three stages, and separated by a complete apyretic interval always the same in extent. These paroxysms appeared from 3 to 4 in the afternoon, and terminated at dawn the following day.

On the 7th of June, at the visiting hour, I found the patient in the following condition: Profound prostration; perceptible lowering of temperature in upper and lower limbs; axillary temperature  $36.4^{\circ}$  ( $97.5^{\circ}$  F.); pulse 120. The patient was bathed in profuse perspiration—his garments, pillows, bed-clothing, and mattress were wet; over the face, trunk, and limbs the sweat ran abundantly; one would have said the patient had been immersed in water. The Sister of Charity reports that this profuse perspiration dated from 4 in the morning, and that the linen had been changed twice. Tongue very furred; intense thirst; great congestion of liver and spleen, the latter viscus two fingers' breadth beyond the left costal border; belly tense; constipation; urine scanty, without albumen. Heart enlarged and weak; systolic bellows-murmur at base of præcordial region, two bellows sounds in carotids; cough infrequent and dry; dyspnœa; fine subcrepitant râles at base of left lung. I diagnosed a sudoral or diaphoretic pernicious attack, and ordered the following:

℞ Sulphate of quinine, }  
 Valerianate of quinine, }  $\text{ää}$  2 grammes.  
 Gummy extract of opium, 0.45 gramme.  
 Soft extract of cinchona, q. s.

Make eighteen pills. One every hour together with two tablespoonfuls of Agua Ingleza.

Also ordered a stimulant cathartic enema, and sinapisms to extremities.

At 3 P.M. the patient appeared better; but at

5.30 the perspiration again became as profuse as in the morning, and true algidity declared itself. At 8 P.M. epileptiform convulsions set in, and death occurred at 11 P.M. preceded by a short period of coma.

*Autopsy* (ten hours after death): Very marked anæmia of cerebral centres; the white and gray matter of cerebrum and cerebellum less consistent than in normal state; these organs seemed to have been macerated in water for several days. Medulla oblongata very pale, but of physiological consistency. Lungs sound, barely œdematous infiltration at base of left. Heart enlarged, pale, flabby, easily breaking down, pitting on the slightest pressure; dilatation of left auricle and right ventricle, with thinning of their walls; some eccentric hypertrophy of left ventricle; valves and orifices normal. Liver very large, hardened, of dark red color, presenting in right lobe some zones of dirty yellow; the cut surfaces were dry, a little blackish blood flowing from them on pressure. Gall-bladder containing but little bile, very compact and dark. Spleen hypertrophied, 18 centimeters in its greater diameter and 6 in its transverse (7 by  $2\frac{1}{2}$  inches), very hard and resisting the edge of the scalpel. Kidneys pale and of normal size. The gastro-intestinal canal was not examined.



## VII.

*Ardent* pernicious fever is exclusively characterized by the excessive heat which the patient presents in the second stage of the paroxysm ( $105.5^{\circ}$ ,  $106^{\circ}$ ,  $106.8^{\circ}$ ,  $107.6^{\circ}$  F.), and by the prolonged duration of this stage (eighteen, twenty-four, thirty-six and forty-eight hours). After such an elevated temperature the thermometer rapidly falls below  $98.6^{\circ}$ , a short agony appears, and death takes place. This form of pernicious fever is rare with us, and usually terminates fatally. In ten years' time I observed only two cases, and the patients died. Three elements are necessary to the exact diagnosis of the disease: to know that the patient is under the influence of the malarial poison, that he has none of the diseases exciting great increase of febrile heat (variola, scarlatina, pneumonia, meningitis), and that this heat exceeds certain limits; for this latter the thermometer becomes indispensable.

*Case 8.*—Camillo, free mulatto, driver of a diligence, thirty-two years old, very robust, living in Mataporcos, entered the Santa Izabel ward on July 28, 1867. Had suffered from paroxysms of quotidian intermittent fever, attended by facial neuralgia, for a fortnight. When he entered the hospital (at 5 P.M.) he complained of great pain in the right temporal region, and had very high fever. The physician on duty prescribed a diaphoretic mixture containing tincture of aconite and acetate of ammonia, a purga-



tive enema, and one gramme of sulphate of quinine, to be given as soon as the fever lessened.

*Condition on July 29th:* Face very flushed and swollen; eyes brilliant; temperature of skin very high; pulse 120, full and hard; pain in right facial region. Tongue covered with very thick white fur; great thirst; nausea; epigastrium sensitive to pressure; liver enlarged; spleen larger than normal; belly tense; two evacuations induced by enema; urine scanty and very red; nervous and respiratory systems in normal condition.

Ordered twenty leeches to anus; six wet cups to hepatic region; an emetic mixture containing ipecac and antimony; 2 grammes of sulphate of quinine in two doses, after operation of emetic.

At 3 P.M., after the leeching, cupping, and emesis, the patient perspired profusely and had less fever; at this time one gramme of sulphate of quinine was given him in a glass of sulphuric lemonade.\* At 6 o'clock, in spite of his finding himself much hotter, he took the second dose of the remedy.

July 30th. Prostration of strength; skin very dry and hot; pulse 128, less full and hard; absence of pain in face; tongue very coated; greater enlargement of liver and spleen; same sensitiveness of epigastrium; constipation; urine very scanty and high-colored; respiratory organs sound; no delirium; insomnia.

Ordered a mixture containing two grammes of bisulphate of quinine, and an equal dose of tincture of digitalis; a purgative enema; Stoll's antiphlogistic beverage *ad libitum*.

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\*Acid sulphuric (at 1.84), 2 grammes.

Water, 900 grammes.

Syrup, 100 grammes.

At 5 P.M. the patient was in the same condition. At 4 in the morning of the 31st he became comatose with cold extremities; died at 7 A.M.

*Autopsy* (nine hours after death): Some injection of vessels of brain and meninges. Lungs and heart normal. Great congestion of liver and spleen. Very intense reddening of mucous membrane of stomach and duodenum. Kidneys hyperæmic.

*Case 9.*—Joaquim Soares de Mello, Portuguese, twenty-nine years old, farm laborer, residing in Itaguahy, entered the Santa Izabel ward August 12, 1875, with malarial cachexia. Under the use of pills composed of subcarbonate of iron, soft extract of cinchona, and sulphate of quinine, besides the Agua de Inglaterra, frictions of tincture of iodine to the hypochondria, and restorative diet, the patient was improving perceptibly.

On September 2d the interne found him at 8 in the morning with a temperature of  $106.2^{\circ}$  F. At the visiting hour the Sister of Charity informed me that he had had a violent chill at 9 the night before. The tongue was very furred. There was no change in any of the other organs; the liver and spleen, which had been still enlarged the evening previous, had not increased in size. An emetic, and one gramme of sulphate of quinine after its action, were the means used that day. At 5 in the afternoon, in spite of copious emesis, and the dose of quinine which was well borne, the temperature reached  $107.3^{\circ}$ . The interne prescribed a mixture of tincture of digitalis and veratrine, which did not produce the slightest benefit. At 2 in the morning of the 3d the patient expired.

Autopsy revealed nothing special beyond hyper-

trophy of the liver and spleen, eccentric hypertrophy of the left ventricle of the heart, and paleness of the white substance of the brain.

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## VIII.

The *comatose* form, the most frequent after the *algid*, is characterized by the sudden appearance of coma or *carus*, without preceding delirium or other sign of cerebral excitement. From simple *sopor* to true *apoplectic carus*, we observe in this form of *pernicious fever* the diverse grades of collapse of the innervation of the brain. Sometimes the *febrile reaction* is slight or even *nil*; sometimes the patient appears with a very high temperature, accompanied usually with a pulse small, infrequent, and hard, or even intermittent. The existence of *hemiplegia*, coincident with the *comatose* condition, when the latter depends directly upon a *pernicious paroxysm*, has been justly disputed by the most eminent *pyretologists*.

In none of the cases observed by me has the patient been *hemiplegic*. Complete relaxation of the upper and lower limbs, relaxation of the sphincters of the anus and bladder, giving rise to involuntary evacuations of *fæces* and urine, more or less complete loss of general and special sensation, and abolition of reflex motion, are the symptoms attending the coma.

The *comatose* form is that most frequently met with in the cases where a *pernicious paroxysm* has not been preceded by simple intermittent attacks. Thence arises the reason why the inexperienced practitioner will often find himself embarrassed in making

a precise diagnosis, especially if he does not attend to a certain number of circumstances foreign to the symptomatology.

Cerebral hæmorrhage, apoplectiform cerebral congestion, and cerebro-meningitis in the second stage, are the three diseases which may be confounded with a pernicious paroxysm of comatose form when no attack of simple intermittent fever, frank or masked, has preceded, or when no person interested in the patient's health is found at his side to furnish information of the previous history. The first two affections, essentially apyretic, can only be confounded with pernicious fever when during the paroxysm to be recognized the patient has a temperature normal or below normal. The third, essentially febrile, will only be taken into account if the thermometer reveals the existence of fever.

In cerebral hæmorrhage, the apoplectic coma either lasts for some hours and disappears, leaving in its place the symptoms of paralysis, or it has a long duration and is followed by death; in the former case, doubt in regard to diagnosis will be very transitory; in the second, the extension of the hæmorrhagic centre, or the capital importance of the part of the brain affected, gives such expressiveness to the array of symptoms that the diagnosis is very prominently marked. The pallor of the face, the puffing-out of the commissure of the lips during expiration ("*fumer à la pipe*"), the coolness of the extremities, the exces-

sive smallness and concentration of the pulse, the absolute inertia of the limbs, the rapidity with which these symptoms appear, or the nature of the prodromata preceding them, guide the physician safely in the path of truth. Moreover, cerebral hæmorrhage demands certain pathogenic conditions which are easily appreciable in the majority of cases.

Rupture of the vessels is induced—by changes in their walls (*arteritis deformans, atheroma, fatty degeneration, miliary aneurism*); by lessening of the consistency of perivascular tissue (the hæmorrhagiparous softening of Rochoux); by increase of tension of the blood (hypertrophy of the heart with valvular lesion, chronic lesions of the respiratory organs); or by changes in the crasis of the blood (pyæmia, scorbutus, chlorosis, hæmophilia, cholæmia, malarial cachexia). As we shall see in the paragraph especially devoted to the diagnosis of pernicious fever in general, there are a certain number of signs which serve as a guide to the physician in perplexing cases, and which are fully applicable to the comatose form. In cerebro-meningitis, before the appearance of the coma, the patient evinces symptoms of cerebral excitement, which are very marked if the inflammation is seated in the upper or convex portion of the brain, and of little intensity or transitory if the basal regions are especially compromised. These symptoms of excitement (delirium, convulsions, spasms) precede the comatose stage, whether this stage be connected with the compres-



sion of the nervous substance by the meningeal exudate (effusion) or whether it be the expression of the collapse of the brain which is always observed when excitability of that organ has been induced for a long time or with exaggerated intensity (cerebral neurolysis). In comatose pernicious fever, as already stated, there are no prevailing phenomena of cerebral excitement—the coma is primary. Thus, even though the patient present great febrile reaction, the manner in which the disease began will serve to exclude cerebro-meningitis from the diagnosis.

The previous existence of acute articular rheumatism, the coincidence of pain and swelling of the joints, are valuable elements by which to distinguish cerebral rheumatism of apoplectic form from comatose pernicious fever.

The precedence of delirium or convulsions, together with the presence of a large amount of albumen in the urine, helps us not to confound uræmic disease of the brain with comatose pernicious fever. The phenomena peculiar to convulsive hysteria, or those proper to anomalous hysteria, are of avail for the recognition of hysterical coma.

*Case 10.*—Luiz Poyares, Portuguese, thirty-five years old, carter, strongly built, residing in Andarahy Grande, entered the Santa Izabel ward on the 17th August, 1874. He had suffered from intermittent fever in February, 1873, according to several students who had seen him in the fifth ward, where he was under treatment for several days. Having entered

comatose at 6 o'clock in the evening, the physician on duty prescribed a stimulant purgative enema, blisters to the legs, and six leeches to each mastoid process. The persons who brought in the patient could tell nothing about him but his name, age, residence, and occupation.

August 18th. Face flushed and congested; moderate degree of coma; when urgently aroused, the patient opens his eyes and utters some confused and unintelligible words, falling at once into the same stupor; resolution of upper limbs, some automatic movements in lower; absence of paralysis of motion; deadened sensation; pupils a little dilated; exaggerated heat in frontal region; axillary temperature  $39.6^{\circ}$  ( $103.3^{\circ}$  F.); pulse 90, hard. Belly tympanitic; hepatic region painful—strong pressure over this region excites some contractions in patient's face indicating pain; the liver is three fingers' breadth beyond the right costal margin; spleen larger than normal; the tongue cannot be examined, notwithstanding efforts to this end. The purgative enema of the evening before has excited one large evacuation; the blisters have burned well, and the leeches drawn a little blood. The patient has urinated in bed, and the bladder is empty.

Ordered twenty leeches to margin of anus; a purgative enema, and after its action an enema every three hours containing one gramme of sulphate of quinine, until four have been taken; one gramme of sulphate of quinine on the denuded surface left by blisters; as soon as the patient can open his mouth and swallow, to take one gramme of sulphate of quinine in a glass of sulphuric lemonade.

At 5 P.M. the interne and two students, designated by me, found the patient much better. Only

two enemata of quinine had been administered; the leeches had drawn enough blood, and it still flowed from some of the bites. The purgative enema produced a copious evacuation. The coma had in great part disappeared; the patient answered questions put to him, but with difficulty. Intelligence dull; axillary temperature  $38.2^{\circ}$  ( $100.8^{\circ}$  F.); pulse 86. The interne gave with his own hands one gramme of sulphate of quinine (which the patient took very well by mouth), and advised that the two remaining enemata be given.

August 19th. Condition extremely flattering. Deafness of cinchonism very manifest; entire absence of cerebral symptoms; intellect clear, answers very precise. Axillary temperature  $37.4^{\circ}$  ( $99.3^{\circ}$  F.); pulse 78. Tongue large, moist, and hardly coated at base. Appetite. Belly relaxed; liver still enlarged, as also the spleen; urine a little loaded with sediment.

Ordered one gramme of sulphate of quinine by mouth, and one gramme by enema; natural Vichy water; frictions with tincture of iodine in hepatic region; soup and broth.

The doses of sulphate of quinine were gradually diminished up to the 22d, when they were suspended. The patient had fuller diet day by day, and was discharged convalescent on the 26th.

*Case II.*—Sabino, free mulatto, fifty years of age (supposed), was brought to the Santa Izabel ward on the 5th September, 1875, at 8 A.M., in a state of profound coma. The person who accompanied him reported that on the 4th at 2 P.M. he had chills, and then fever which lasted till noon next day, and was better up to nightfall, having taken merely rosemary tea and burnt brandy, which caused him to sweat profusely.

*Condition on admission:* Profound coma; face

puffy; resolution of all four limbs; axillary temperature  $39.8^{\circ}$  ( $103.6^{\circ}$  F.); pulse 86; belly tympanitic; liver much congested; spleen of normal size; respiratory system normal. Urine not examined.

Ordered twenty leeches to verge of anus, and six to each mastoid process; blisters to calves of legs; a stimulating purgative enema, and after its action an enema every three hours containing one gramme of sulphate of quinine, until four are taken.

At 2 P.M. the patient died, having hardly taken the first enema of sulphate of quinine.

*Autopsy* (nineteen hours after death): Great injection of arachnoid, pia mater, and cerebral tissue; sero-sanguineous effusion into lateral ventricles. Thoracic organs sound. Liver much enlarged, turgid with blood and of dark red color; spleen slightly enlarged, friable, breaking down easily on slight traction of its parenchyma. Bladder contracted, mucous membrane hyperæmic, and containing about an ounce of urine free from albumen. Stomach and intestines normal.

## IX.

In the *cerebro-meningeal* form, frequent in excitable persons of marked nervous temperament, and in second childhood, some anomalies are observed in the succession of the cerebral symptoms, so that the experienced practitioner recognizes that he has not to do with a clear, primary, protopathic or essential cerebro-meningitis. When the febrile stage supervenes, delirium appears, almost always noisy and attended by great agitation. If the delirium is very intense or prolonged, it is temporarily succeeded by coma, reappearing later on the paroxysmal exacerbation of the fever. During the hours of febrile remission, when the thermometer indicates lessening of a degree or more (Centigrade) in the axillary temperature, whether or not there be perspiration, the patient is calmer, or becomes comatose if the cerebral excitement has been very exaggerated. Strabismus, general or partial convulsions, cramps, subsultus tendinum, carphologia, crucidismus, and all other cerebral symptoms which appear, undergo notable oscillations in the course of the twenty-four hours, closely following the variations of febrile temperature. The liver and spleen, which remain untouched in idiopathic cerebro-meningitis, increase in size and become congested and painful in cerebro-meningeal pernicious fever.

*Case 12.*—There entered the hospital of Nossa

Senhora da Ajuda, in February, 1872, a lad twelve years of age, shop-boy, with high fever ( $102.9^{\circ}$  F.), dry skin, headache, tongue furred, liver a little congested, and bowels constipated. These symptoms had been preceded by a severe chill the night before. At the visiting hour (10 A.M.) I prescribed an emetic of ipecac and antimony, a purgative enema, sinapisms to the lower extremities, and one gramme of sulphate of quinine to be given as soon as the fever should diminish, the skin become moist, and some evacuations occur. The patient vomited and purged profusely, became free from headache, and completely apyretic at 3 P.M. when the nurse gave him the dose of quinine in a glass of sulphuric lemonade. As soon as the medicine was swallowed it was ejected by vomiting. The zealous and intelligent interne of the establishment, on being informed of this, ordered the same dose of quinine repeated in four pills, which the lad took at 5 P.M., drinking after them half a glass of sulphuric lemonade strongly acidulated. At 8 P.M. the headache and fever reappeared, without preceding chill.

The next day I found the patient in great agitation and delirium, face flushed, eyes brilliant and injected; he tried to get out of bed, believing himself threatened by hell-hounds present in the ward; great loquacity; convulsive tremor of upper limbs; convergent strabismus of both eyes. Exaggerated heat of forehead; axillary temperature  $40.2^{\circ}$  ( $104.5^{\circ}$  F.); pulse 128. Tongue tremulous, dry, with a rust-colored spot in the centre. Abdomen ballooned, tympanitic, and very sensitive to percussion, especially in hepatic region; liver enlarged; spleen of normal size; urine scanty. The patient would not allow suitable exploration of respiratory organs.



Ordered twelve leeches to verge of anus, and six to each mastoid process; a mixture containing 8 grammes of laurel-water, 10 centigrammes of extract of belladonna, 2 grammes of bisulphate of quinine, and 30 grammes of syrup of hyoscyamus, to be given in spoonful doses every two hours; a stimulant and purgative enema, and after its operation two enemata of sulphate of quinine of 6 decigrammes each, at four hours' interval; blisters to calves of legs; compresses steeped in oxycrate\* and frequently renewed, upon the shaven head.

At 8 P.M., visiting the patient for the second time, I found him with paralysis of the œsophagus, drowsiness interrupted by sub-delirium, lower extremities cold, and belly very swollen. The axillary temperature was  $40.8^{\circ}$  ( $105.5^{\circ}$  F.); pulse 136, very small and weak. At 3 the following morning he died.

No autopsy was performed.

*Case 13.*—A boy of seven years, always enjoying good health, was attacked by a sub-continued fever, which resisted for three days the various antipyretic means employed to combat it. The attending physician, presuming that it was a pyrexia of malarial origin, administered 6 decigrammes of sulphate of quinine during full febrile reaction. Three hours later the child was bathed in sweat, the heat diminished, and the pulse lost a little of its frequency; two hours after this remission induced by the quinine, the fever increased, the skin became dry again, the pulse very frequent, and a series of grave nervous symptoms appeared: delirium, convulsive movements of upper and lower limbs, general hyperæsthesia, and

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\*A mixture of honey and dilute vinegar.

opisthotonos. Thirty-six hours after the appearance of these cerebro-spinal phenomena I was called to see the little patient, who had at his bedside three distinguished physicians, his very near relations, Drs. Benjamin Ramiz Galvao, Sebastian Saldanha da Gama, and Queiroz Carreira.

I found: Incomplete coma; delirium when patient is aroused from the comatose state; sharp cries, groans, sighing respirations, automatic movements of upper limbs, spasm of lower limbs; general hyperæsthesia, particularly in the calves; opisthotonos and some trismus; tongue dry; difficulty of deglutition; belly prominent and tympanitic; liver increased in size; spleen very large and sensitive to percussion; febrile heat marked; pulse frequent and small. Some mucous râles scattered over both lungs.

Ordered a mixture containing 2 grammes of bisulphate of quinine, to be given in teaspoonful doses every hour; blisters to thighs; a purgative and anti-spasmodic enema; fomentations to spine with mercurial and belladonna ointment.

Contrary to the expectation of all, the little patient managed to recover at the end of three weeks, making constant use of the sulphate of quinine in decreasing doses. He remained deaf for a week.

## X.

The *convulsive* form is very common in early infancy. The child, after some simple intermittent attacks, or in the enjoyment of perfect health, is seized with convulsions, which sometimes become general, constituting a true attack of eclampsia, or are partial and limited to the muscles of the face and one of the upper limbs. These convulsive paroxysms are at times accompanied from the beginning with well marked febrile reaction, or again the fever appears only after they have ceased.

In general the convulsions are attributed to the process of dentition, or to the presence of intestinal worms, or to a disturbance of digestion. Cathartic medication is usually employed, and after its operation the little patient uses an antispasmodic mixture. The convulsive movements cease, the child reacquires its usual briskness, and everything indicates that the danger is past. But later on the paroxysm recurs, more violent and prolonged than the first, and leaving as a trace of its passage a comatose condition of the highest gravity. If the first attack rarely occasions the death of the patient, the second is as a rule fatal, and only in rarely observed exceptions is life maintained after the third.

For the diagnosis of the convulsive form of pernicious fever the physician should keep in view the precepts to be formulated further on, as well as the

existence of fever—seeing that, as a general rule, the reflex convulsions connected with difficult dentition, indigestion, or the presence of *ascarides lumbricoides* in the intestines are not attended, preceded or followed by the febrile state.

*Case 14.*—A child, three years of age, female, strong and healthy, daughter of a physician residing in Sao Christovao, became dumpish and lost appetite, going to lie down a great part of the day instead of running about and playing as she was used to do. Her mother noticed that from noon on, the palms of her hands kept very hot, and she perspired much during the night. The father gave her a purgative of castor oil and prescribed frictions of sulphate of quinine in aromatic vinegar.

On the 12th of June, 1874, the child was seized with a violent attack of convulsions, which lasted from 5 in the afternoon to 8 at night. After the convulsive movements, entirely clonic, fever appeared, together with coma. When I saw the little patient, at 8 A.M. on the 13th, the coma had already disappeared, there was still some fever, the tongue was furred, the liver much enlarged, and the abdomen doughy. I ordered an antimonial mixture, and sulphate of quinine internally in coffee, by enema, and in frictions. The mixture induced profuse vomiting, evacuations, and diaphoresis; the child took 6 decigrammes of quinine by stomach, the same by rectum, and 2 grammes endermically. At 6 P.M. I found her without fever and doing well, asking for food.

On the 14th, 15th, 16th, 17th, and 18th, she continued the use of sulphate of quinine, in gradually diminished doses. She recovered entirely and regained her usual strength.

*Case 15.*—A boy five years old, blonde and lymphatic, son of a foreign merchant, residing in the Rua S. Clemente, was suddenly attacked by convulsions at nightfall of the 21st December, 1873. The physician called to see him thought it a case of indigestion, as the child had eaten cauliflower cooked with butter at dinner, and bananas for dessert. This opinion seemed indisputable, since the stomach had rejected by vomiting during the convulsions a part of the food ingested, in an advanced stage of chymification. A purgative enema (32 grammes of castor oil), and later on a mixture of the tincture of chamomile and belladonna, were the prescriptions during the night of the 21st and the 22d. The boy remained during the latter day greatly prostrated, with insomnia and entire loss of appetite. Whenever he dozed a little, he awoke with a start, calling on his mother. At 5 P.M. fresh convulsions appeared, tonic and clonic, prolonged till 6 o'clock the following morning. I saw the patient in consultation at 8 A.M. I found him with upper and lower extremities completely algid and bathed in clammy sweat, pulse extremely frequent and small, the trunk (especially the chest) with a very high temperature and also covered with profuse perspiration, respiration oppressed and stifled, intellect dull, with drowsiness, belly tympanitic, liver enlarged and painful on palpation and percussion, spleen normal, tongue furred, and urine much decreased. I diagnosed a convulsive pernicious fever, considered the case hopeless, and advised the use of sulphate of quinine in large doses by the mouth, by enema, and by friction, Agua de Inglaterra, sinapisms to the extremities, and fomentation of abdomen with oil of chamomile and essence of turpentine. All this was done, but in vain; the boy died at 2 in the afternoon.

## XI.

In the *delirious* form of pernicious fever, the patient presents as the predominant symptom during the paroxysm a delirium of varying character. Sometimes it is furious delirium, a true acute mania; the subject becomes greatly agitated, cries, vociferates, insults and attempts to injure the people about him, tries to get out of bed, to fly, believes himself threatened and pursued by vindictive enemies, hears voices insulting him, etc. This form of delirium, which is that most frequently observed with us, is often accompanied by fever, but again is present without the least febrile reaction. After it has lasted for the space of some hours, the intellectual disturbance calms little by little, reason regains its rule, and profuse perspiration bathes the entire surface; the patient falls into a lethargy, and sleeps quietly and deeply.

In other cases the delirium does not manifest itself so briskly; the patient becomes irascible, intolerant, inconsequent and unreasonable; commits improper acts, at variance with his education and habits; expresses himself in unaccustomed terms to his friends and relations; he seems entirely different from what he is in his normal state. These unusual phenomena, which ordinarily pass unnoticed at the beginning, are sometimes attended by hallucinations of the senses. I have seen a child seven years of age at-



tacked by paroxysms of pernicious fever characterized as follows: At ten o'clock at night he awoke with general tremors due to a violent chill; then he began to cry out, saying that many fierce dogs were trying to bite him, and pointed to one corner of the room where he said these dogs were. Thus he passed two hours, surrounded by his parents trying to pacify him, and then became bathed in sweat. The crisis passed, he slept tranquilly, and arose the following day well, with barely some depression and loss of appetite. He had three paroxysms, gradually more serious and prolonged; the parents had given him a vermifuge, supposing the illness to depend on the presence of *ascarides lumbricoides* in the intestinal canal.

When I was called to see the patient, he had had the third attack and was still agitated, uneasy, and overpowered by a certain terror; the pulse was frequent, and the temperature of the skin above the normal; the tongue was covered with fur, and the bowels were constipated and doughy; the liver and spleen kept their physiological size. I prescribed a purgative of castor oil, and 75 centigrammes of sulphate of quinine to be given in three doses, one every two hours, after the operation of the cathartic. The night of this day the child had an intermittent paroxysm, characterized by the three stages, but no delirium or hallucinations. The sulphate of quinine was continued in the same dose three consecutive days, and afterwards in doses progressively diminished.

At the end of a week the boy was completely cured.

*Case 16.*—Jose Gonçalves Tinoco, Portuguese, aged thirty-seven, employé of the Tramway Company of S. Christovao, residing in the Rua do Machado Coelho, entered the Santa Izabel ward on the 11th July, 1873. Had had at various times attacks of intermittent fever, and presented the external appearance of malarial cachexia. Is not a hard drinker.

*Condition:* Yellowish pallor of face and rest of body; conjunctiva pale; no dropsy; axillary temperature  $38.8^{\circ}$  ( $101.8^{\circ}$  F.); loss of appetite; nausea; constipation; liver and spleen enlarged; cardiac sounds normal; bellows murmur in carotids. Respiratory and urinary organs normal.

Ordered an emetic of ipecac and antimony; one gramme of sulphate of quinine after operation of emetic; friction with tincture of iodine in right and left hypochondria; chicken broth, coffee and wine.

The patient had an attack of fever on the 13th and 14th; the first began at 6 P.M., and ended at 11 A.M. the following day. Took this day 12 decigrammes of sulphate of quinine in two doses, the first at noon and the second at 3 P.M. The other paroxysm appeared at 8 P.M., terminating at 2 in the afternoon of the 15th. The patient took one gramme of sulphate of quinine at 3 P.M. and another gramme at 7 P.M. At 9 o'clock occurred another attack accompanied by a violent delirium, which rendered the use of a strait-jacket necessary. The following day I found the patient still delirious, bathed in profuse sweat, with axillary temperature of  $39.2^{\circ}$  ( $102.5^{\circ}$  F.) and pulse 120, tongue very furred, liver still more enlarged than on preceding days, and spleen of same size as observed up to then.

R Bisulphate of quinine, 3 grammes.  
Sulphate of morphine, 0.05 gramme.  
Syrup of orange-peel, 30 grammes.  
Water, 100 grammes.

A tablespoonful every hour.

Also a stimulant and purgative enema, and blisters to calves of legs.

At 5 P.M. the interne found the patient calm, with only some sub-delirium; had slept quietly two hours; body bathed in profuse perspiration, axillary temperature  $38.6^{\circ}$  ( $101.5^{\circ}$  F.), and pulse 98. The mixture not yet exhausted. The blisters had not yet drawn.

July 17th. Nearly absolute deafness—necessary to shout to make patient hear; wandering and vertigo; no delirium. Axillary temperature  $38.2^{\circ}$  ( $100.8^{\circ}$  F.); pulse 90; large amount of sweat soaks the patient's garments and bed-clothing. Tongue still much coated; liver greatly enlarged, but a little less than the day before; spleen in same condition. Two bilious stools from enema. Urine less bilious, free from albumen. Respiratory organs sound. For the first time a soft systolic bellows-murmur heard at base of heart, extending to apex.

Ordered same mixture repeated, reducing the proportion of quinine to 12 decigrammes; a purgative enema; 120 grammes of rich Port wine, in three doses; chicken broth.

July 18th. Patient complains of great confusion in head, buzzing in ears, and can sit up in bed only with difficulty on account of faintness (*cinchonism*); deafness continues, but less; no delirium; extreme contraction of pupils; some tremor in upper limbs. Quiet sleep the night before. Axillary temperature  $37.6^{\circ}$  ( $99.6^{\circ}$  F.); pulse 64; still profuse perspiration;

tongue less coated; some appetite—distaste for broth; little thirst. Three very large bilious stools from enema. Liver much less enlarged, as also spleen. Urine scanty, bilious, passed with pain and difficulty (*dysuria*). Abnormal murmur of heart persists.

℞ Soft extract of cinchona, 8 grammes.  
Tincture of valerian, }  
Sulphuric ether, } ää 4 grammes.  
Syrup of orange-peel, 30 grammes.  
Canella-water, 180 grammes.

To take two tablespoonfuls every two hours.

Also to take full-bodied Port wine 120 grammes, half a glass every two hours, alternate with mixture; a purgative enema; friction of hypochondria with tincture of iodine; rice soup, coffee.

July 19th. Perceptible improvement in cerebral symptoms due to cinchonism; vertigo disappeared, deafness decreasing, still some dizziness when patient gets out of bed to go to stool or take medicine. He remains lying down, and answers well questions put to him; still some tremor in upper limbs noted. Axillary temperature  $37.5^{\circ}$  ( $99.5^{\circ}$  F.); pulse 72; decrease of sweating. Tongue less furred. Liver and spleen in same condition. One bilious stool immediately after enema. Urine more abundant, richer in bile-pigment, passed more easily and with less pain. Cardiac bellows-murmur still heard.

Ordered same mixture and same dose of wine; 4 grammes of calisaya in powder, in coffee, at noon; chicken broth; soup.

The cerebral symptoms dependent on the action of the sulphate of quinine disappeared little by little; the patient continued to gain strength, and on the 24th began the use of pills composed of 15 centigrammes

of sulphate of iron, 10 centigrammes of soft extract of cinchona, and 5 centigrammes of sulphate of quinine (three pills daily); Agua de Inglaterra, and a restorative diet consisting of meat, bread, wine, and coffee.

He was discharged on the 5th August, still retaining some paleness of face and mucous membrane, and some enlargement of liver.

In this case of delirious pernicious fever, the grave attack appearing in a cachectic person who had had simple paroxysms rebellious to progressively increased doses of sulphate of quinine, it was necessary to have recourse to this drug with great vigor, producing in the system the symptoms of therapeutic poisoning in order to save it from the miasmatic poisoning. I am convinced that it would have been impossible otherwise to obtain the happy result which crowned the medication employed. The symptoms observed in the patient on the 17th and 18th July give us a very exact idea of the action of the sulphate of quinine in large doses on the nervous and urinary systems. The fear of aggravating the symptoms produced by cinchonism, which had already attained a high degree of intensity, led me to suspend the sulphate of quinine on the 18th, and to replace it with 4 grammes of calisaya from the 19th on.

*Case 17.*—There entered the hospital of Nossa Senhora D'Ajuda, in March, 1874, a young Portuguese, of twenty-odd years, residing in the Rua D'Ajuda, who presented as his only morbid manifestations a loquacious delirium, and congestion of the

liver. The pulse was 80, and temperature  $37.6^{\circ}$  ( $99.5^{\circ}$  F.). This was at 10 A.M.; and when I saw the patient half an hour after, I ordered 2 grammes of sulphate of quinine in two doses, at three hours' interval. At 6 P.M. the delirium became so furious as to require the use of a strait-jacket, the pulse had become more rapid, and the temperature rose to  $39.5^{\circ}$  ( $104.1^{\circ}$  F.). At 10 P.M. coma came on, attended by profuse sweat and cooling of the extremities, and at 2 in the morning the patient died. A friend who took charge of the patient informed the interne that the unfortunate young man had been ailing for a week, and that every afternoon he had been seized with a paroxysm of fever, without having made use of any treatment.



## XII.

In the *neuralgic* form of pernicious fever, very frequent in Rio de Janeiro, are observed external neuralgias or visceralgias, which constitute the perniciousness of the attacks. Among the former the most commonly noticed are: neuralgia of the fifth pair (facial), left intercostal, crural, sciatic, and temporo-occipital; among the latter the chief are gastralgia, hepatalgia, splenalgia, enteralgia, ovaralgia, and hysteralgia. The same occurs with the neuralgias accompanying pernicious paroxysms as with other phenomena characterizing perniciousness: they either exist together with fever or are entirely apyretic (masked fevers); sometimes they disappear completely when the paroxysms terminate, sometimes merely lessen in intensity, to recur later with extreme violence.

Left intercostal neuralgia is at times accompanied by severe palpitations of the heart, pallor of the face, oppression and dyspnoea, simulating an attack of angina pectoris; when this group of symptoms is observed, the pernicious paroxysm is termed *cardialgic*.

Occipito-temporal neuralgia is at times attended by giddiness, ringing in the ears, and photophobia. Gastralgia may be accompanied by vomiting, hepatalgia by jaundice, and ovaralgia and hysteralgia by hysteriform convulsions.

*Case 18.*—F——, merchant, forty-five years of age, Portuguese; went to Porto das Caixas on business,

was there ten days, and on returning to the city felt only fatigue and loss of appetite. Two days after his return, on a Sunday morning, he felt indisposed after breakfast, vomited all he had eaten, and about noon was attacked by a facial neuralgia, attended by fever. He took of his own accord some homœopathic doses of tincture of *nux vomica* and tincture of *aconite*. At 9 P.M. the intensity of the neuralgic pain and fever, as well as the oppression and uneasiness he suffered, obliged him to call a physician (of Hahnemann's school).

The next day the patient's condition was so delicate that his family decided to call in consultation the Councillor Felix Martins, Dr. Paula Costa, and myself. We found him with countenance red and flushed; right eye much injected, lachrymating and very sensitive to light; intense pain over the whole right side of face, forehead, and skull. Pulse full and frequent; skin hot and dry. Tongue covered with a thick coat of white fur, tending to dryness at tip; insatiable thirst, constant nausea, and at times vomiting. Great sensitiveness of epigastrium and right hypochondrium; liver much enlarged, spleen a little increased in size, bowels constipated; urine scanty and high-colored. Agitation; insomnia; from time to time some delirium, which turns on business affairs. Respiration accelerated, at times suspirious; no physical signs on percussion and auscultation of the heart and lungs.

Ordered twelve leeches to verge of anus; emetic mixture of *ipêcac* and antimony; mixture of 2 grammes of sulphate of quinine, after operation of emetic; veratrine ointment to right side of face and body; a purgative enema containing *asafoëtida*.

On the following day I found him much better. The face was less red, less painful, and the right eye

less injected and weeping; pulse less full and frequent; temperature of skin less elevated; tongue less furred and moister; epigastrium painless on pressure; liver smaller. The nervous symptoms were of less intensity; patient slept quietly for three hours. Respiration less accelerated. The emetic caused profuse vomiting and four stools; the quinine mixture, given in spoonful doses every hour, had been repeated at 8 P.M. The patient at the hour of my visit had taken 3 grammes of the sulphate of quinine. Ordered the same mixture in spoonful doses, every two hours; currant shrub as beverage; a purgative enema containing asafœtida; same ointment for face.

Improvement progressed gradually, and the dose of bisulphate of quinine was daily lessened. Ten days after the consultation Sênhor F—— was convalescent, and went later to Tijuca, whence he returned perfectly recovered.

*Case 19.*—Entered the hospital of Nossa Senhora D'Ajuda in February, 1874, a mulatto slave, thirty-odd years old, weak and anæmic, who complained of intense pain in præcordial region, accompanied by oppression and dyspnœa. The interne of the establishment, although very talented and well informed, when he examined him at 8 A.M. believed it to be a case of commencing pleurisy, and ordered four wet cups to be applied to the seat of pain. Two hours after, on my visit to the ward, I found the patient in the following state: Sitting up in bed, since the horizontal decubitus caused him great uneasiness; extremities cold; axillary temperature  $100.8^{\circ}$  F.; pulse frequent and small; acute pain in præcordial region, exacerbated by pressure, percussion, and movements of respiration. No physical signs furnished by auscultation and per-

cussion; no cough; great dyspnœa. Tongue slightly furred; great thirst; anorexia. Liver and spleen normal; bowels constipated; urine scanty but normal.

Although the patient assured me that his disease dated from the night before, and that until then he enjoyed good health, I diagnosed a pernicious attack of cardialgic form, said that the prognosis was very grave, and ordered him 2 grammes of sulphate of quinine in two doses, as well as a diffusible stimulant mixture into which entered tincture of musk, ether, valerian and opium; to the seat of pain application was made of compresses steeped in a concentrated solution of cyanide of potassium. All was in vain; at 3 P.M. the patient died, having become completely algid an hour before.

*Case 20.*—A boy of nine years, residing in the Rua da Conceição, very lymphatic and feeble, after taking a long walk in March, 1875, on an excessively hot day, complained later of a pain in the right thigh, which did not allow him to walk with freedom. At 9 P.M. he had fever, and so remained till the following day, when he was seen by the family physician, who only prescribed a diaphoretic mixture and a fomentation of camphor and opium. Later the pain of the thigh increased greatly in intensity, the fever was exacerbated, and delirium set in. At 8 the next morning I saw the patient in consultation. He had already taken 6 decigrammes of sulphate of quinine; he was delirious and presented some convulsive movements in the left arm and muscles of the left side of the face; he had high fever and a pulse of extraordinary frequency. The liver was congested and the belly tympanitic. A purgative and antispasmodic enema, 12 decigrammes of sulphate of quinine in two

doses to be taken in small enemata after the operation of the former, blisters to the calves of the legs, repeated frictions to the spine, axillæ and groins with 90 grammes of aromatic vinegar holding in solution 8 grammes of sulphate of quinine, were the remedial means I advised and which were agreed to by the attending physician. At 1 o'clock in the afternoon the boy died.

*Case 21.*—Paulo Valdez, Spaniard, forty years old, clerk in a cigar factory in the Rua dos Ourives, very thin and pale, entered the Santa Izabel ward on the 12th of May, 1861. Has had intermittent fever at various times, and three years ago was taken with severe hæmoptysis, for which he was treated in the same ward. Is suffering from gonorrhœa a month old, for which various injections have been used. On the day of his entering the hospital, at noon, he had a severe chill, followed by intense pain in the epigastrium, vomiting, and later, fever. His suffering increasing in the afternoon, he decided to go to the hospital at 7 P.M., having requested to be treated by the distinguished professor and councillor, Dr. Valladao (Baron de Petropolis). The physician on duty prescribed for him a mixture containing laudanum, tincture of chamomile, and tincture of nux vomica.

*Condition on the 13th:* Face pale; general emaciation; evident signs of impoverished nutrition; pulse 98; temperature of skin a little above normal; tongue much coated; vomiting from time to time, especially on swallowing a large amount of water; very intense thirst; pain in epigastrium, lessened by pressure with a pillow, and at times exacerbated, extorting cries from the patient; liver a little enlarged; spleen normal; evacuations natural; belly retracted; urine free from



albumen. Cough frequent at night—muco-purulent expectoration, little dyspnœa; dullness on percussion of infra-clavicular region, and supra- and infra-scapular region of right side; thoracic resonance of other parts of same side diminished; normal resonance all over left side; very frequent subcrepitant râles and bronchophony in right infra-clavicular region; gurgling in the points corresponding to the space limited by the internal border of upper third of right scapula and vertebral canal of same side; subcrepitant râles in supra-spinous fossa; very rough friction-sound at lower angle of scapula and in axillary region; puerile respiration in left lung. Heart normal.

Ordered: Powdered ipecac, 3 decigrammes every half-hour until four doses were taken; 6 decigrammes of quinine sulphate to follow emesis by ipecac; a wineglassful every two hours of infusion of cinchona and musk, 360 grammes mixed with 30 grammes of syrup of tolu.

The patient only vomited twice; he took the quinine at 1 P.M.; two hours later was seized by a chill, and the epigastric pain became extraordinarily violent, obliging him to roll on the floor of the ward. At 6 o'clock he had hiccoughs and was algid, and at 9 P. M. he died.

*Autopsy* (twelve hours after death): Nothing noteworthy in cranial cavity. Strong adhesions of right lung with pleura, especially in posterior aspect; tubercles in different stages of development occupy the whole of the upper lobe of the right lung; two cavities in top of same lobe, one the size of a pigeon's egg, the other of a small nut; the lower lobe of the same lung is compact, hardened, and slightly crepitant. In the left lung are noted some tuberculous granulations scattered through upper lobe; in the



lower portion of this lobe a tuberculous nodule the size of an almond, composed of a hollow friable mass which, when divided with the handle of a scalpel, opens a regular cavity with smooth homogeneous walls. Dilatation of right ventricle of heart, with thickening of its walls; two indurated plaques in horizontal portion of arch of aorta. Stomach containing bile and mucus, vessels somewhat injected. Liver enlarged, congested, of a dark red color. Spleen of normal size, but its parenchyma very friable. Nothing appreciable in intestines, kidneys, and bladder.

The history of the disease of Valdez, the course it followed, its unexpected termination, the unusual violence of the gastralgia, and the absence of anatomical lesions which could explain his speedy death, left not the least doubt that it was a case of gastralgic pernicious fever. The eminent practitioner who took charge of the patient was of this opinion, although he had some tendency to believe, at the commencement, in the existence of tubercular peritonitis in process of evolution. In the absence of any important symptoms of this affection, he had recourse to the sulphate of quinine, giving thus one more proof of his prudence and high professional standard. In connection with this case the Baron de Petropolis mentioned to the students several cases of gastralgic pernicious attacks observed by him, making in regard to the diagnosis of this affection some remarks of great practical value.

*Case 22.*—José, black slave, kneader of bread, residing in the Rua D. Manuel, fifty years old (sup-

posed), entered the Santa Izabel ward on the 31st May, 1874, at 6 A.M. Is addicted to alcohol, and has suffered from buboes. On the night of the 30th was attacked by a pain in the hepatic region, at first not severe, but which became later so violent as to force him to groan and cry out from midnight to the time he was brought to the hospital. The interne ordered applied to the seat of pain a flaxseed poultice very hot and well sprinkled with laudanum, which produced some immediate relief but of short duration.

Face distorted, expressive of great pain; patient lies on his belly in bed, bending a little to the right; profuse cold and clammy sweat bathing entire surface. Very acute pain in hepatic region, starting from centre of this region and extending forward to epigastrium and behind to back, increased by pressure and percussion, as also by respiratory movements and cough. Pulse 92; axillary temperature  $37.2^{\circ}$  ( $99^{\circ}$  F.); tongue large, moist, and rose-colored. Vomiting. The size of liver cannot be well ascertained, as the patient will not allow suitable examination of right hypochondrium; no jaundice; spleen normal; bowels swollen and constipated; urine clear and lessened in amount. Bellows murmur in sternal region; percussion sound at point corresponding to right border of second piece of sternum; first cardiac sound not distinctly heard at left nipple. Respiratory system sound.

Ordered a purgative enema; likewise:

R Valerianate of quinine, 2 grammes.  
Extract of hyoscyamus, 30 centigrammes.  
Extract of stramonium, } ää 20 centigrammes.  
Extract of opium, }

Divide into twelve pills. One every two hours.

R	Essential oil of turpentine,	} ää 30 grammes.
	Oil of hyoscyamus,	
	Tincture of opium,	
	Chloroform,	

Use to foment hepatic region every three hours.

Contrary to the expectation of all, the patient died a little after noon, having barely had time to take two of the pills and use the fomentation twice.

*Autopsy* (twenty-one hours after death): In the cranial cavity the only lesion noted is atheromatous degeneration of the basilar artery. Extensive patches of atheroma in ascending aorta, horizontal portion of arch, and descending aorta; dilatation of this vessel to extent of 4 centimeters from origin of innominate; fatty degeneration of heart—induration of sigmoid, aortic, and mitral valves; lungs normal; stomach and intestines normal; liver enlarged, presenting various discolorations on its external surface, at some points a dark green color, at others light yellow, deep red or mahogany red. On cutting the parenchyma of the liver, a great flow of blood is observed; the surfaces of the section present the same variety of color as the external surface; a great part of the right lobe undergoing fatty degeneration. Spleen normal; kidneys fatty.

I presume that I am not deceived in considering this case an example of hepatalgic pernicious fever. Simple hepatalgia, though causing the patient great suffering, does not have the duration of pain here experienced, and does not terminate fatally in little over twelve hours. Might the liver have been selected for the local seat of perniciousness because it was

already suffering from chronic lesions due to alcoholism? It is very probable—the more so as this is observed in a great majority of cases in every other organ suffering from a chronic disease, when a pernicious paroxysm bursts forth.

### XIII.

The *pneumonic* form of pernicious fever is very frequent with us. At times the inflammation invades the more central parts of the parenchyma of the lung, without the pleura being attacked; again, there is a true pleuro-pneumonia observed, with severe stitch in the side and other symptoms of the disease when primary and idiopathic. In this latter case it is very rare for the diagnosis to be well established until the further progress of the affection clears it up.

During the paroxysm, which is always accompanied by high fever, the lung becomes extensively congested. In the beginning—that is, for a few hours after the initial chill—the lesion does not pass the congestive stage, and auscultation reveals merely great weakening of the respiratory murmur at some points of the lung, crepitant or subcrepitant râles at others. If the attack is of short duration, the stage of pulmonary hepatization is not developed; upon remission, the parenchyma of the organ reacquires wholly or in part its physiological permeability, until a fresh paroxysm makes it again impermeable. But when the attack is very prolonged, or when the type of fever is sub-continued or even remittent, the hyperæmia of the lung is followed by extra-vascular exudation, the exudate hardens, and the pulmonary zone in which this phenomenon occurs becomes hepatized; auscultation reveals the existence of bronchial respiration, and per-

cussion of the wall of the chest at the points corresponding to the lesion shows complete loss of resonance. Under the appropriate treatment generally used in pneumonia, the hepatization begins to disappear, but as soon as the fever recurs, and the paroxysm returns, either the same pulmonary region that was becoming permeable becomes again hepatized as it was before, or other portions are affected, the pneumonia extending in surface and depth.

In pneumonic pernicious fever, dyspnœa is always very marked, and is not in proportion to the extent of the pulmonary lesion; the cough is often dry and infrequent, and when there is expectoration the sputa remain bloody for several days.

The course of the fever in a case of pneumonic pernicious fever is very different from that observed in a simple essential pneumonia, and this is doubtless the best source of differential diagnosis for the physician.

In inflammation of the lung the temperature rises rapidly, attains a high degree, reaches its apogee in the short space of some hours, and here remains for several days, with slight oscillations of three- to five-tenths of a degree (Centigrade) less in the morning and more in the evening; from the fourth to the eighth day of the disease—with us usually on the fifth day—the temperature falls rapidly, reaches the physiological limit or even some tenths of a degree below it, and there occurs what modern physicians term deferves-



cence. At the same time the febrile heat ceases, the local resolution of the pneumonia commences, the exudates begin to break down, the liquefaction being denoted by subcrepitant râles (return-râles) which replace, little by little, the bronchial respiration; expectoration becomes more easy and profuse; the urine increases in amount and becomes very rich in urates, phosphates, and alkaline chlorides.

In pneumonic pernicious fever the febrile heat follows the evolution of the paroxysms, sometimes assuming the frankly intermittent type, sometimes the remittent, with a difference of one or two degrees (Centigrade) between the morning and evening temperatures. As to the local lesion, it either remains the same in spite of the cessation or sensible diminution of the fever (which is very rare, and even, so to speak, never observed, in idiopathic pneumonia); or it decreases sensibly while the febrile reaction persists with slight remissions—and then we must seek another explanation for this fever; or it begins to be resolved as the paroxysm declines, and recrudesces when another paroxysm develops—and we know that simple pulmonary inflammation never takes this course. Thus the anomalies in the progress of the temperature, the want of harmony between the fever and the local condition of the lung, are very important circumstances in the diagnosis of pneumonic pernicious fever. The value of these two signs is evident in the two following cases:

*Case 23.*—João Paulo Dias, Portuguese, tailor, thirty-two years old, residing in Pedregulho, entered the Santa Izabel ward on the 15th June, 1872, at 6 P.M. Never suffered from intermittent fever, but had yellow fever with black vomit in March, 1860, two months after coming to Brazil. Is very subject to catarrh of respiratory organs, and whenever he takes cold remains hoarse for several days.

On the 14th, in returning to his house at 8 P.M. it rained and he wet his feet. On the 15th had a severe chill, attacked by stitch in right side and some cough. Later on had high fever, the pain in side became more intense, and he spat some blood. He was brought to the hospital in a carriage, and the physician on duty prescribed a mixture containing 10 centigrammes of tartar emetic and 16 grammes of acetate of ammonia.

*Condition on the 16th:* General condition satisfactory, nothing in external appearance indicating impoverished nutrition. Axillary temperature  $38.8^{\circ}$  ( $101.8^{\circ}$  F.); pulse 90. Intense pain in right side of thorax, two centimeters below and behind nipple, exacerbated by respiration and especially by cough; some dyspnœa (28 respirations per minute); frequent dry cough; one tenacious and bloody sputum noticed in spit-cup.

It was recognized by percussion that the resonance of chest-wall was diminished in lower third of right side, especially in anterior and lateral aspects. Auscultation revealed existence of friction-sound in axillary region to its anterior limits, crepitant râles four centimeters below nipple, and subcrepitant râles from lower third of scapula downwards; absence of bronchial respiration and bronchophony; some exaggeration of vocal resonance at points where there

is dullness. Nothing abnormal observed on left side. Tongue much furred; loss of appetite; thirst. Bowels constipated; liver and spleen of normal size; urine scanty and high-colored.

Ordered five wet cups to anterior and lateral surfaces of right side of chest, lower third; infusion of ipecac containing 10 centigrammes of tartar emetic.

At 5 P.M. the interne found patient much relieved from pain, but with more dyspnœa (32 respirations per minute), temperature  $40.2^{\circ}$  ( $104.4^{\circ}$  F.), and pulse 120. (Physical signs on auscultation and percussion of chest not mentioned in case-paper.)

June 17th. Great dyspnœa (38 respirations per minute); cough very frequent and dry; pain in side but slightly intense. Dullness on percussion of lower third of right side of chest, in all three aspects; increased vocal vibration at these points; friction-sound; bronchial respiration and bronchophony very marked. Nothing abnormal in left side. Temperature  $39.5^{\circ}$  ( $103.1^{\circ}$  F.); pulse 108. Tongue still much furred. Liver a little enlarged. The patient felt great relief after application of cups; the emetic mixture produced copious vomiting and three large evacuations.

Ordered five more wet cups to right side of chest; also:

R Nitre, 4 grammes.

Acetate of ammonia, 16 grammes.

Syrup of tolu, 30 grammes.

Infusion of polygala, 360 grammes.

A wineglassful every two hours.

At 5 P.M. the interne found the patient with a temperature of  $40.6^{\circ}$  ( $105.2^{\circ}$  F.), pulse 112, respiration much accelerated (38), and some delirium. He or-

dered him a mixture containing 2 grammes of tincture of digitalis and 8 grammes of laurel-water.

June 18th. Temperature  $40.2^{\circ}$  ( $104.4^{\circ}$  F.); pulse 108. Tubular respiration all over right lateral aspect of chest, posterior aspect to lower angle of scapula, and in front beneath the nipple; also bronchophony at these points, and percussion-sound completely dull. On the left side is noted puerile respiration in upper two-thirds, and subcrepitant râles in lower third. Cough rare, no expectoration; 38 respirations per minute; entire cessation of pleuritic pain. Tongue covered with yellow fur; loss of appetite, and great thirst. Liver enlarged and painful; spleen normal; urine scanty and bilious. No delirium, nor any symptom on the part of the nervous system.

Ordered: Calomel, 1 gramme in three doses, to be given one every two hours; sulphate of quinine, 2 grammes, in three doses, one to be taken in a glass of sulphuric lemonade every three hours, after purgative effect of calomel; a large blister to right side and back of thorax.

At 5 P.M. the interne found the patient in the same condition, with a temperature of  $40.5^{\circ}$  ( $105^{\circ}$  F.), pulse 120, and respiration much accelerated (36). The blister had not yet burned, and the calomel had produced only one stool; first dose of quinine not yet given.

June 19th. Patient had six large evacuations during night. Took first dose of quinine at 5 o'clock in the morning, and the second at 8 A.M. (12 decigrammes). Temperature  $38.9^{\circ}$  ( $102^{\circ}$  F.); pulse 100. Patient groans with pain from dressing of blister an hour before, and does not allow proper exploration of chest. The ear applied very lightly to thoracic wall perceives distinctly the tubular sound. Cough

more frequent and loose; sputa viscid, bloody, and yellowish. Tongue less furred. Liver smaller; urine bilious.

Ordered 60 centigrammes of sulphate of quinine now (9.30 A.M.) and 60 more at noon (2.60 grammes in seven hours); confection of marshmallow with 8 grammes of bicarbonate of soda and 12 grammes of acetate of ammonia, sweetened with syrup of squill; two meat broths.

At 5 P.M. the interne found the patient bathed in profuse perspiration, with a temperature of  $37.8^{\circ}$  ( $100^{\circ}$  F.), and pulse 82. The cough was frequent and loose, expectoration easy, and the sputa continued bloody. Thorax not examined for fear of exciting pain.

June 20th. Marked improvement. Complete apyrexia; temperature  $37.2^{\circ}$  ( $99^{\circ}$  F.), and pulse 76. Respirations 24. Cough loose; sputa yellowish, abundant, and some of them bloody. Percussion cannot be made on account of pain due to blister. Auscultation reveals the existence of great numbers of subcrepitant râles mingled with tubular respiration, especially in axillary region, bronchophony and bronchial cough. Tongue cleaner; some appetite; liver less enlarged. Patient had three evacuations. Urine more abundant and heavily loaded.

Ordered 60 centigrammes of sulphate of quinine now (9 A.M.) and same dose at noon; same alkaline drink; three meat broths.

At 5 P.M. temperature  $37.2^{\circ}$  ( $99^{\circ}$  F.), pulse 68.

June 21st. Progressive improvement. Temperature  $37.2^{\circ}$  ( $99^{\circ}$  F.); pulse 64. Deafness of cinchonism—sensation in ears as of a distant waterfall. Cough very loose; expectoration easy; sputa yellowish, and some slightly tinged with blood. Still dullness on per-



cussion of lower two-thirds of entire posterior aspect of right side of chest, and of lateral aspect. Bronchial respiration heard only at line of lower angle of scapula and axilla; in rest of lung very coarse subcrepitant râles. Tongue large, moist, and rose-colored. Appetite. Two evacuations in twenty-four hours. Liver almost normal; urine abundant and less turbid.

Ordered 1 gramme sulphate of quinine in 120 grammes good Port wine, half a glass to be taken every two hours; blister dressed with cerate; soup, broth, coffee.

On the 23d the use of sulphate of quinine was suspended; the tubular sound had completely disappeared, and the subcrepitant râles were replaced by coarse and infrequent mucous râles. The pulse remained slow till the 26th, due without doubt to the action of sulphate of quinine upon the circulatory system. The only medication employed up to the 5th of July was wine of cinchona, in the dose of 180 grammes daily. The patient was discharged that day perfectly recovered.

*Case 24.*—Felicissimo, mulatto slave, thirty-six years old, joiner, well built and robust, addicted to abuse of alcoholic drinks, entered the Santa Izabel ward on the 28th May, 1874, at 2 P.M.

On the 26th, after leaving the shop in which he worked (Rua de S. Pedro) he returned to his master's house (Rua Formosa) without feeling the least indisposed. He supped well at 9 P.M. and drank to excess. He rose unwell on the 27th, complaining of headache. His master, supposing he had been intoxicated the night before (as he was accustomed), chastised him with a stick and made him carry a dozen casks of water for the use of the household. On finishing



this task, which Felicissimo performed with much effort, he felt a stitch in the left side of the chest and some chilliness. At 5 P.M. he had high fever, and, after coughing a little, spat blood. They gave him some cups of infusion of elder-flowers with tincture of aconite, and a foot-bath; but on the 28th, finding himself no better, he was seen by a physician, who prescribed wet cups to the seat of pain and an antimonial mixture. This prescription was not filled, and the patient was sent to the hospital. The physician on duty had his colleague's orders carried out.

*Condition on the 29th:* Face very flushed, with a red spot on left malar region; eyes injected, weeping, very sensitive to light; very intense frontal headache. Axillary temperature  $40.5^{\circ}$  ( $105^{\circ}$  F.); pulse 100, full and hard. Acute pain in left lateral aspect of thorax and lower border of axilla, exacerbated by cough and respiratory movements. Cough dry and frequent; two sputa almost wholly composed of blood noticed in spit-cup; dyspnœa, especially owing to stitch in side (26 respirations per minute). On percussion some diminution of resonance in lateral aspect of left side of thorax; friction-sound in axillary region, especially perceptible during cough, and the only symptom revealed by auscultation. Nothing abnormal in right lung. Tongue covered with white fur; anorexia and great thirst. Bowels doughy and constipated; liver enlarged; urine scanty and high-colored. The antimonial mixture has produced vomiting and some perspiration.

Ordered twelve leeches to anus; six wet cups to left side of thorax; calomel, 1 gramme (in three doses); castor oil, 60 grammes, two hours after last dose of calomel; sulphate of quinine, 1 gramme, to be taken after free purging.

At 5 P.M. the interne found the patient much relieved of the pleuritic pain, with a temperature of  $39.2^{\circ}$  ( $102.5^{\circ}$  F.), and pulse 90. Had not yet taken the sulphate of quinine.

May 30th. Exacerbation of stitch; frequent cough; many sputa of frothy red blood; greater dyspnoea than the evening before (32 respirations per minute); friction-sound all over axillary region and in anterior part of left side of chest; fine subcrepitant râles at same points; more marked decrease of thoracic resonance. Temperature  $40.5^{\circ}$  ( $105^{\circ}$  F.); pulse 108. Tongue less furred, but a little dry at tip. Belly softer; liver still greatly congested. Urine same as last evening. The patient had six stools, and took the sulphate of quinine at 7 P.M.

Ordered mixture containing 2 grammes of sulphate of quinine and 30 grammes of diacodium syrup,\* in three doses, at two hours' interval; six more wet cups to left side of chest; infusion of *Cipo chumbo*† with syrup of gum (Arabic) as beverage.

At 5 P.M. manifest improvement; pain very bearable; absence of bloody sputa; temperature  $38.6^{\circ}$  ( $101.5^{\circ}$  F.); pulse 82. Stethoscopic signs about the same. The interne ordered the ptisan continued.

May 31st. Pleuritic pain hardly perceptible; two bloody sputa during morning; cough more infrequent; little dyspnoea (22 respirations per minute). Friction-sound very notable during inspiration; subcrepitant râles rarer and coarser; still diminution of resonance on percussion. Temperature  $37.8^{\circ}$  ( $100^{\circ}$  F.); pulse 80. Tongue clean in great extent; belly soft; liver still enlarged; urine more abundant and less loaded.

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\* A mild opiate preparation.

† *Cuscuta umbellifera*, or *C. racemosa* (Martius).

Ordered blister to left side of chest, to be dressed with basilicon ointment; same mixture of sulphate of quinine; same ptisan as beverage; meat broth.

June 1st. The temperature of evening before noted in case-paper— $37.4^{\circ}$  ( $99.3^{\circ}$  F.)—without further information; which indicates that patient did well during the day. At the visiting-hour he complained bitterly of the pain caused him by the dressing of the blister, made at 7 A.M., and which still torments him. Did not spit blood; has coughed but little. Will not allow the least exploration of left side of chest. Temperature  $37.2^{\circ}$  ( $99^{\circ}$  F.); pulse 88. Tongue good; belly soft. One large evacuation in twenty-four hours. Liver little enlarged. Dysuria; patient presents signs of cantharidal cystitis.

Ordered mixture containing 1 gramme of sulphate of quinine; emollient confection containing 4 grammes of nitre; belladonna ointment to hypogastric region; two rice soups; stew.

June 2d. Functions of urinary system reëstablished. Temperature the previous evening  $37.2^{\circ}$  ( $99^{\circ}$  F.). The patient thinks himself well, and begs urgently for better diet. In the region of the chest occupied by the blister are still heard friction-sound and some mucous râles; little cough, expectoration rare, sputa mucous; respiration normal (20). Tongue large and moist. Appetite. Liver almost normal. Temperature  $37.2^{\circ}$  ( $99^{\circ}$  F.); pulse 80.

Ordered 45 centigrammes of quinine in 120 grammes of quinine wine; chicken stew; broth; coffee.

The use of quinine was suspended on the 3d; the patient continued to have better diet, and was discharged on the 10th perfectly well. A little friction-sound was still heard in lower part of left axilla on deep inspiration.

In this case the diagnosis was established from the very first day the patient was examined. The intensity of the fever, the high degree of temperature in contrast with the local symptoms (which at the outset hardly indicated a simple pleurisy), the congestion of the liver, and the initial course of the disease, concurred efficaciously to this end. In the patient of Case 23 it was impossible, for the first two days of the disease, to recognize that it was a pneumonic pernicious fever and not an essential pleuro-pneumonia. The unusual course of the morbid phenomena, especially of the febrile heat, the appearance of the bilious element, as well as the results obtained with the first doses of sulphate of quinine, cleared up the diagnosis very much.

## XIV.

When a person is predisposed to chronic ailments of the respiratory system, especially when he suffers from pulmonary tuberculosis, the pernicious fever which attacks him sometimes assumes the *hæmoptoic* form—reveals itself by profuse hæmoptyses which seriously compromise the patient's life and are reproduced with a certain regularity. In the intervals of the paroxysms are observed some sputa of blackish blood in greater or less amount, which attest the presence of coagula in the smaller bronchial ramifications. These coagula, irritating the parenchyma of the lung, excite nuclei of lobular pneumonia, the exudate of which easily passes into caseous degeneration; and thus is prepared a phthisicogenic process for the future.

The regularity with which the pulmonary hæmorrhage appears at certain hours of the day, and the inefficacy of the means usually of avail in cases not of pernicious fever, are elements of diagnosis which often guide us, besides others which apply to all grave forms of malarial infection, and which I shall take up minutely in the section devoted to diagnosis.

*Case 25.*—José Espinheiro, Portuguese, twenty-three years of age, clerk, of lymphatic temperament, pale and impoverished, residing in S. Francisco Xavier, entered the Santa Izabel ward, then in charge of the Baron de Petropolis, on the 8th August, 1864.

He is subject to bronchitis and laryngitis; coughs habitually, and has had more than once attacks of intermittent fever, which yield readily to sulphate of quinine. At 3 P.M. on the day of his entry he was seized with shivering, a sensation of severe constriction in the sternal region, and a few minutes after by a violent coughing-fit followed by a very profuse hæmoptysis. The physician on duty prescribed a mixture of nitre, ergotine and tannin, sinapisms to the lower extremities, and perfect rest.

*Condition on the 9th.* Face pallid, expression languid; general emaciation; clavicles and scapulæ very prominent. Apyrexia; pulse 76; heart normal. Cough, sputa composed of little clots of blackish blood; dyspnœa. Diminution of resonance in upper third of right lung, behind as well as in front; respiration harsh, and coarse subcrepitant râles at same points; sibilant râle in lower third. Respiration harsh at apex of left lung in front, mucous and sibilant râle at base and behind. Tongue good; anorexia. Abdominal viscera normal.

The eminent professor diagnosed pulmonary tuberculosis in first stage, of both lungs, and hæmorrhage in upper lobe of right; he ordered the same mixture continued, and applied a blister between the shoulders. At 4 P.M. the physician on duty was called to the patient's aid, who had again been attacked by a severe hæmoptysis. He replaced the mixture by another containing the perchloride of iron, and ordered dry cups applied to the anterior part of the chest. The interne two hours later found the patient febrile, which was mentioned in the case-paper and reported the following morning to the Baron de Petropolis.

August 10th. Apyrexia; pulse 78. Greater confluence of subcrepitant râles in right lung—these râles



are perceived over a greater extent; sputa of blood very abundant; dyspnœa more marked, panic terror, the patient believing himself irremediably lost. Tongue lightly coated; bowels constipated; liver and spleen normal; urine normal.

Ordered 12 decigrammes of quinine in 360 grammes sulphuric-acid lemonade, a wineglassful to be taken every two hours; a purgative enema of electroly of senna.

At 6 P.M. the interne carefully observed the patient, and only mentioned in the case-paper that the bloody sputa had become more numerous, the pulse more frequent (86), and the heat of skin greater.

August 11th. Apyrexia; pulse 74; the pulmonary râles perceived over greater extent and less confluent. Patient says he is much better. From 6 A.M. to the visiting-hour (9 A.M.), spat blood only once; some dyspnœa. The purgative enema produced two large evacuations. Same treatment, except enema.

The patient took sulphate of quinine till the 14th, in decreasing doses. The hæmoptysis did not recur, and respiration continued improving.

On the 15th was prescribed an infusion of cinchona and musk with syrup of tolu, to be taken in wineglassful doses during the day, a tablespoonful of cod-liver oil at breakfast and dinner, and restorative diet. This treatment continued till the 24th, when the patient demanded and received his discharge. Although in better condition, his general state was not yet satisfactory; percussion revealed no notable difference in thoracic resonance; auscultation disclosed great roughness of vesicular murmur at apex of both lungs, chiefly the right, where, besides being more marked, it was of greater extent.

*Case 26.*—A married lady, mother of two children, twenty-eight years of age, residing in the Rua do Areal, was attacked by hæmoptysis a month after having been treated by me for a bilious remittent fever which required large doses of sulphate of quinine. She consulted me in much terror, convinced that she was consumptive. I examined her with all care at 7 A.M.—the hæmorrhage had occurred at 10 the night before. I found her much disheartened, very pale, and still expelling some bloody sputa, but without fever. Some subcrepitant and sibilant râles in the left scapular region, and a little less resonance on this side, were the only morbid signs I perceived. The general condition was good. As the patient was subject to catarrh of the respiratory organs, and had lost a mother and aunt by pulmonary tuberculosis, I was inclined to believe that tubercular granulations existed in the apex of the left lung, particularly in the more internal parts of the organ, and that they had provoked the hæmorrhagic flow of the previous evening. Ordered four wet cups applied to the left shoulder, and a mixture containing 1 gramme of gallic acid and 2 grammes of ergotine, to be given in spoonful doses very two hours.

At 3 P.M. I was urgently summoned to see the patient, and learned that she had had a severe chill, followed by fever and a second pulmonary hæmorrhage, having lost less blood than the first time. I found her with high fever, pulse frequent and full, and very intense frontal headache. Auscultation revealed the existence of a greater amount of subcrepitant râles at the apex of the left lung, and percussion gave a less clear sound in the infra-clavicular region. The patient spat blood frequently, in the form of reddish clots. I suspected that a pneumonia was developing,

and therefore prescribed a mixture containing 15 centigrammes of tartar emetic, and 30 grammes of diacodium syrup, and ordered a blister applied to the upper anterior surface of the left side of the chest.

Great was my surprise when the following day at 8 P.M. I found the patient entirely apyretic. This fact, and still more the whitened appearance of the tongue, as if it had been whitewashed, led me to prescribe 12 decigrammes of sulphate of quinine in two doses.

Later I found the patient without hæmoptysis and without fever, more flushed, and almost without cough. Auscultation showed a few subcrepitant râles in the left lung, and the resonance of the chest was perfect. There was much distaste for food, and constipation. I ordered a saline cathartic, and recommended that the two doses of quinine be repeated next day.

Improvement was progressive; still I gave quinine for three days more (1 gramme, 6 decigrammes, and  $\frac{1}{2}$  gramme). The respiration became good; but there was still an unaccustomed degree of roughness in the vesicular murmur at the apex of the left lung, and the voice sounded hollow at this point. These signs, together with the hæmoptysis, as well as the patient's previous history, led me to advise her to retire to Theresopolis, where she remained six months, and whence she returned stout, strong, and healthy.

Perhaps some may deny this case to be one of hæmoptoic pernicious fever, and would explain the pulmonary hæmorrhage by tuberculosis, the existence of which seemed very probable. But considering that the hæmoptysis continued despite the use of wet cups to the chest and an astringent mixture; that it recurred attended by fever and headache, and preceded by a

chill; that sixteen hours later all the febrile action had completely ceased, and the tongue preserved the appearance which generally with us attests the passage of a paroxysm of malarial fever; and that the patient did not lose a drop more of blood after taking the sulphate of quinine,—I believe that every experienced practitioner will agree with me. It is true that the circumstance of the presence of granular tubercles in the left lung concurred powerfully and immediately in the determination of the two hæmorrhages by the paroxysms to that organ, which is also indisputable as regards the patient in Case 25; but what seems beyond doubt is that in both instances the tuberculosis played the part of predisposing cause; without the direct influence of malarial miasm, betrayed in imperfect and insidious attacks, pneumorrhagia would not have appeared on that occasion.

## XV.

The *asthmatic* form of pernicious fever is little known to foreign pyretologists, to judge by the silence they observe in regard to it in their descriptions and divisions. With us it has passed unnoticed by some physicians, otherwise of great merit and enlightened experience. The extreme gravity of the paroxysm, which is almost always single and fatal, and the fact of its attacking only persons ordinarily subject to paroxysmal attacks of asthma—which leads to great difficulty in diagnosis—are the causes which explain such omissions. There are cases of asthmatic pernicious fever in which the paroxysm is accompanied by fever; but there are others in which the patient does not present the least febrile reaction, and it is then impossible to recognize the true nature of the disease before the fatal termination. The patient, adult or infant, offers to the eye of the practitioner the complete tableau of symptoms of asthma, exactly as they have been observed in former paroxysms. The means which have always produced relief become inert and fruitless; long before the usual period of termination of the attacks, the patient reaches the climax of asphyxia, becomes cyanotic, the extremities icy, the body drenched in perspiration, and death supervenes without any precursory symptom of whatever order announcing it. Thus died a celebrated Brazilian surgeon, whose glory was eclipsed by the tinsel of poli-

tics which dazzled him up to the brink of the grave. A few hours before his death he sought at an open window the air lacking to his lungs; he had recourse to a cigar, which he smoked a few minutes, for more than once he had thus lessened his suffering; he tried cigarettes of *Cannabis Indica*; all was in vain; instead of improving, he felt that the disease had reached a degree of intensity never attained during the forty years it had pursued him; he recognized that life was about to leave him, asked to be carried to bed, and a few moments after was a corpse.

*Case 27.*—A girl of twelve years, lymphatic and feeble, was subject to repeated asthmatic attacks from the age of four years. During the summer she had an attack every two months, which lasted eight or ten hours in its greatest intensity, and yielded gradually to an antispasmodic mixture. During the winter the paroxysms recurred at intervals of a fortnight, and sometimes of a week, of greater duration and severity. In July, 1874, this girl was attacked by intermittent fever. She had four simple paroxysms, which did not yield to sulphate of quinine. Her father took her to Cosme Velho, in the hope of curing her by change of locality; the afternoon she arrived there she was seized by asthma, without presenting febrile reaction; they gave her the same remedies they were accustomed to, but without the slightest benefit; at 2 o'clock the following morning she died.



## XVI.

The *rheumatic* form of pernicious fever simulates a case of cerebral rheumatism. There are, notwithstanding, very salient differences between the two diseases. In the former the cerebral symptoms develop at the same time as the articular; the joints become very painful, but are little swollen; many articulations are compromised simultaneously; the fever precedes by several days the appearance of the nervous and arthritic phenomena, and is not accompanied by profuse perspiration; nor is there, in the course of the disease, the least vestige of inflammation or fluxion in the visceral serous membranes; the peculiar symptoms of meningitis are not observed; there is no noisy and turbulent delirium demanding restraint; the patient has sub-delirium, convulsive tremor of the upper limbs, subsultus tendinum, carphologia, crucidismus, and at times dysphagia; the belly becomes tympanitic, the liver enlarged and painful—the spleen also at times; the urinary secretion is sensibly diminished and sometimes suppressed.

In cerebral rheumatism the nervous phenomena manifest themselves after the appearance of the arthritic; the articular rheumatism begins in one or two articulations, and then becomes progressively generalized; the compromised joints are very large, red, and painful; the delirium observed is usually loquacious, obliging the patient to commit unreasonable actions;

cerebral meningitis declares itself openly; in some cases the pleura and pericardium are attacked by the rheumatism; the fever which attends the whole morbid process is accompanied by copious perspiration; the liver and spleen remain untouched.

I have not yet seen a single case of rheumatic pernicious fever which did not terminate fatally. The type of fever is always remittent or sub-continued. In November, 1875, I had occasion to observe a case of this species in the hospital of Nossa Senhora d'Ajuda. It was of a negro slave, who had come from an estate in the interior of the province of Rio de Janeiro, where he had long suffered from tertian intermittent fever. Coming to town, he was again attacked by the same disease, and after the third paroxysm he presented himself with continued fever, pain in wrist-joints, swelling of these articulations, and at the same time sub-delirium, tremor of the tongue and of the upper limbs, and dysphagia. The liver was enormously enlarged, the spleen also enlarged, the belly swollen, and the tongue dry and retracted. Later on supervened coma, the extremities grew cold, and the patient died forty-eight hours after the appearance of the paroxysm.

In this case, deprived as I was of access to the stomach in administering remedies—for during the last twenty-four hours not a drop of fluid passed by the œsophagus—I resorted to subcutaneous injections of the sulphate of quinine, while persisting in the use

of this substance by enema. The interne of the establishment, Senhor Martins Costa, made ten injections of a saturated solution of sulphate of quinine on the inner sides of the arms and thighs, without the least favorable result.

*Case 28.*—The elder son of one of the oldest and most distinguished practitioners of Rio de Janeiro was attacked by a facial neuralgia, which occurred periodically, and yielded to the use of sulphate of quinine. When he thought himself well, he had a well marked paroxysm of intermittent fever, attended by severe pain in the knee- and ankle-joints. His father gave him 12 decigrammes of sulphate of quinine in two doses; in spite of this treatment, another paroxysm occurred, and the compromised articulations became swollen, enlarged, and reddened on the surface. The fever became sub-continued, delirium then set in, and later carphologia. When I saw the patient in consultation he was comatose; he died six hours after, having taken in twenty-four hours 3.3 grammes of sulphate of quinine (50 grains).

## XVII.

In the *syncopal*, *tetanic*, *epileptic*, and *aphasic* forms are observed: in the first, frequent syncope, recurring whenever the patient quits the horizontal posture; in the second, the symptoms proper to opisthotonos, with or without trismus; in the third, true epileptic convulsions, such as are met with in puerperal, uræmic, or saturnine eclampsia; in the fourth, almost total loss of speech, a logoplegia, without the least disturbance of the movements of the tongue.

*Case 29.*—Joao Falleti, fifty-one years old, Italian, residing in Mar de Hespanha (Minas Geraes), jeweler, came to Rio de Janeiro to be treated for chronic congestion of the liver and spleen, the sequelæ of an imperfectly cured malarial cachexia. Lodged in a business house on the Rua de Visconde d'Inhauma, he was regularly following a course of treatment which I had prescribed in my consulting-room on the 11th April, 1874. On the 19th 'I was called to see the patient; found him lying down and not willing to get up, as he had already had three fainting-fits, one of which caused him to fall down and remain senseless for the space of ten minutes; the pulse was frequent, and the temperature of the skin increased; the liver and spleen continued enlarged, and the tongue was coated. The patient arose in my presence to urinate, as I wished to examine the urine, but was at once compelled to lie down in consequence of the vertigo which seized him. I gave him a castor-oil purgative, and after its operation one gramme of sulphate of qui-

nine. The next day at 11 A.M. found the patient better; the vertiginous symptoms appeared only when he stood up. I pressed the sulphate of quinine four days more, and Joao Falleti returned to his former condition, continuing the use of the medicine prescribed for the chronic ailments which first led him to consult me. On the 28th June he returned to Minas completely recovered.

*Case 30.*—Raul, negro slave, twelve years old, entered the hospital of Nossa Senhora da Ajuda on the 26th October, 1874, on the third day of the disease. The evening of the 24th he complained of a pain in the head and had fever; on the 25th he still continued febrile, and was given a purge of castor oil—at 7 P.M. he complained of difficulty in opening his mouth, and of pain in the nape of the neck; on the morning of the 26th the physician called to see him found him with some opisthotonos and trismus, and, notwithstanding the great intensity of febrile reaction, diagnosed tetanus and advised the patient's removal to the hospital.

*Condition on arrival:* Temperature  $40.2^{\circ}$  ( $104.4^{\circ}$  F.); pulse 112; no perspiration. Some spasmodic contraction of the levator muscles of the lower jaw, giving rise to moderate trismus, which does not hinder the examination of the tongue nor the swallowing of fluids; no dysphagia; tetanic contraction of posterior cervical muscles, causing forced bending backwards of head; some contraction of dorsal muscles, inducing slight opisthotonos. Functional soundness of muscles of upper and lower limbs. Intense pain on pressure in cervical region of spine, radiating to the sides; no hyperæsthesia of limbs; frontal headache. Tongue very furred; belly flabby; liver enlarged and sensitive

to percussion, and spleen normal; urine high-colored, without albumen. Heart and lungs normal.

Ordered twelve leeches to cervical region of spine; mixture containing 15 centigrammes of tartar emetic and 8 grammes of laurel-water; 1 gramme of sulphate of quinine, after operation of mixture.

Great was my surprise when I saw the patient next day. He was apyretic, without any of the tetanic symptoms of the evening before, cheerful, and asking for breakfast. The internes who closely attended this interesting case told me that after the leeching and antimonial mixture the child had a temperature of  $37.3^{\circ}$  ( $99.1^{\circ}$  F.), and pulse 86. The mixture gave rise to vomiting, purging, and profuse perspiration; the sulphate of quinine was given at 5 P.M., and the same dose at 9 A.M. of the present day. Tongue less furred; liver less enlarged, and painless. Temperature  $37.2^{\circ}$  ( $99^{\circ}$  F.); pulse 88. Strong pressure made in cervical region excites some pain.

Ordered 6 decigrammes of quinine taken at 1 P.M.; simple saline mixture containing 10 minims of tincture of belladonna; ointment of belladonna to cervical region of spine; chicken broth.

The patient took sulphate of quinine up to the 31st. Convalescence was rapid; discharged November 6th.

In this case my judgment wavered for a moment between a spinal meningitis and tetanic pernicious fever. The lack of disorders of sensation in the limbs, upper and lower, the congestion of the liver, and the course followed by the disease, decided me to embrace the second opinion, besides the fact that the sulphate of quinine would have been in no respect



prejudicial to the patient had the first been correct. The hyposthenic action of the antimony, and especially its effect upon the muscular system, inducing relaxation of the muscles, contributed powerfully to the promptness of the timely action of the quinine.

*Case 31.*—In a lad of fourteen, of extraordinary talent and unbounded application, residing in the largo do Capim, and a patient of my skillful colleague, Dr. Billac, I observed an instance of epileptiform pernicious paroxysms which went on becoming progressively more serious. When I saw the boy in consultation, he had already taken large doses of sulphate of quinine. But in spite of this very rational treatment, at 10 o'clock the night before (the infallible hour of the attacks) he had had convulsions, preceded by hallucinations of sight, and followed by comatose sleep. The association of valerianate of quinine with the sulphate, and with opium, later on, a change to Santa Thereza, and cold bathing by embrocation, cured the patient in a short time.

In 1867 entered the Santa Izabel ward the only case of aphasic pernicious fever I have observed. It was that of an Italian, Joao Victor by name, whose case, minutely noted by Dr. Monteiro de Azevedo, then one of my most distinguished pupils, as well as the clinical lecture to which it gave rise, was published in the first number of the *Revista do Atheneo Medico*, a monthly journal conducted by the medical students, which unhappily had but a brief existence. The patient to whom I refer had aphasia by logoplegia, re-

sided in a notoriously marshy locality, and recovered completely in a few days, thanks to the large doses of sulphate of quinine he took.

## XVIII.

In the undefined form of pernicious fever, represented in my statistics by six cases, there is no one predominant symptom which characterizes the perniciousness; in one and the same paroxysm are noted phenomena of variable order, connected with various organic systems. . . . In some cases every paroxysm is characterized in a different manner; in others there is a mixture and confusion of known and classical forms. In a young man who had just defended his thesis in our university when he was snatched from life, of the six very grave pernicious attacks which were the cause of his death—observed by the late Dr. Paula Fonseca, his father-in-law, by Dr. Ferreira de Abreo and myself, his attending physicians—there were no two alike: the first was clearly delirious, the second convulsive, the third delirious and neuralgic, the fourth delirious and hydrophobic, the fifth algid, and the sixth comatose.

The following case gives a precise idea of the form which I call undefined:

*Case 32.*—Manuel Carvalho, Portuguese, forty years old, agricultural laborer, entered the Santa Izabel ward on the 1st of August, 1873.

Had had intermittent fever at various times, contracted in Inhauma, where he had resided. A month ago removed to Engenho-Novo, and remained there more or less ailing. On the 28th July was seized with a chill at 8 P.M., and afterwards had high fever

and vomiting. Took a sudorific of infusion of orange-buds and elder-flowers, and on the 29th a saline purgative. Continued ill during day, and at night had very intense headache and delirium. Dr. Titara, who visited him on the 30th and 31st, ordered six wet cups applied to region of liver, an emetic of antimony, and sulphate of quinine.—This is the report furnished by a friend of Carvalho, who lived in the same house with him, and who accompanied him to the ward.

*Condition on arrival:* Expression changed, physiognomy indicating profound depression. Temperature  $40.1^{\circ}$  ( $104.3^{\circ}$  F.); pulse 124. Sub-delirium; tremor of upper limbs; insomnia. Tongue dry, tremulous, covered with yellowish fur; belly tympanitic—bowels constipated—especially painful on palpation and percussion; vomiting, hiccough from time to time; liver and spleen much enlarged; suppression of urine, the catheter not drawing off the least amount of this fluid. Dyspnœa; diminution of resonance, and fine subcrepitant râles, in lower third of both lungs, posterior aspect; entire absence of cough.

Ordered: Quinine valerianate, one-third gramme every two hours in half a glass of Agua de Inglaterra, until six doses are taken.

R	Tincture of valerian,	}	ää 2 grammes.
	Tincture of musk,		
	Sulphuric ether,		
	Syrup of orange-peel,		
	Hydrolate of canella,*		150 grammes.

Two tablespoonfuls every two hours, alternating with the doses of valerianate of quinine.

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\* One part of canella to four of water, and distil.

A purgative enema containing asafœtida; blisters to calves of legs; 6 decigrammes of quinine sulphate to each raw surface produced by blister.

This vigorous medication was followed regularly and exactly under the superintendence of eight students named by me, besides the two internes. The patient went from bad to worse; at 9 P.M. his extremities grew cold and coma set in; he died at 3 in the morning.

*Autopsy* (seven hours after death): Injection of sinuses of dura mater, arachnoid vessels, and brain substance; some sub-arachnoid effusion. Great congestion of lower lobe of both lungs, old pleuritic adhesions in right. Nothing abnormal in peritoneum; liver very large and turgid with blood; spleen enlarged and softened; bladder contracted, containing about eight grammes of muddy urine, without albumen; kidneys much congested, with their cortical substance of a very deep dark-red color.

In this case, which was under the observation of the students only a few hours, it was not easy to say what was the form assumed by the pernicious fever. The nervous symptoms, such as sub-delirium, insomnia, tremor of upper limbs and tongue, authorized us to admit the ataxic form; the abdominal tympanites, extreme sensitiveness of the belly, vomiting and hic-cough, led others to accept the peritoneal form; the congestion of both lungs, perfectly characterized on percussion and auscultation, attended by great dysp-nœa, made some share the idea that it was a case of pneumonic form. What was evident was the ex-

istence of an acute and very grave manifestation of malarial poisoning, rebellious to the means employed before the patient's entering the hospital. The autopsy confirmed this judgment.



## XIX.

The course of pernicious fever, whatever be its form, is characterized by rapid evolution of the morbid phenomena, which go headlong to a fatal termination, or retrograde with the same rapidity and are replaced in a few days by convalescence. Thus, as a person in the enjoyment of perfect health being attacked by a fatal pernicious paroxysm, dies in a few hours, so also is it very common to see a person, in danger of his life under the influence of a very grave pernicious attack, entirely safe next day. Some of the cases I have reported fully demonstrate the reality of both the one and the other fact.—There is no physician who has not verified for himself the truth of this assertion. Pernicious fever, then, is a disease of essentially rapid course; in a few days, and at times in a few hours, the question of the patient's life or death will be decided; to-day the gravity of the paroxysm carries him to the brink of the grave; to-morrow he may be found in so flattering a condition as to authorize the physician to promise a speedy recovery.

If there are cases of pernicious fever in which the patient has been attacked previously by paroxysms of simple, well marked or masked intermittent, there are also cases, unhappily numerous, in which it is the pernicious attack that opens the scene, where the subject, in the enjoyment of the most flourishing

health, is treacherously assailed by the terrible enemy without the least signal to warn of the enormous peril awaiting him. Still more, cases are not rare in Rio de Janeiro of rapid deaths caused by pernicious attacks, which appear suddenly and smite down their victims in a few hours. At certain seasons of the year, during the hotter months, instances of this sort are observed somewhat frequently, particularly if the sewerage, gas and water companies happen to be making deep and extensive excavations in the more central streets of the city. Then, the immense laboratories of telluric miasmata thus prepared, and receiving from solar rays and showers the elements necessary to their maximum activity, take charge of the poisoning of the population, which always pays them a heavy tribute.

It is very rare for a patient to have more than three pernicious attacks. He ordinarily yields to the third, when medication has become powerless. If he has not taken the appropriate remedies, or if these have not been energetically given, the fatal termination takes place in the second paroxysm. In some forms, especially the comatose and algid, the second attack is almost always mortal. Hence is deducible the important practical precept of resorting to therapeutic means with the greatest possible promptness and vigor in every case of pernicious fever. With the exception of the young candidate for a degree who died after having had six pernicious paroxysms,

I have never observed in any patient a greater number of attacks than three.

In virtue of the rapid course of pernicious fever, patients, when they recover, pass through a very mild and brief stage of convalescence.

## XX.

The pathological anatomy of pernicious fever comprises two parts: one invariable, referable to the basis of the disease, which is itself invariable; the other extremely variable, referable to the great variety of forms which the disease assumes.

In many cases, especially in the graver, in those where the first paroxysm kills the patient and kills him in a few hours, pathological anatomy tells us nothing which can explain the fact of the fatal termination—still less the sudden and rapid manner in which it occurs. It is in these cases, where there has been no time for the organs to suffer appreciable changes, that there may be some support to the opinion of the vitalists, who believe that death supervenes in consequence of the profound *sideration* which annihilates the vital force. As a general rule, the shorter the duration of the disease and the less the number of paroxysms, so much the less change do the organs present after death, especially those which were the seat of the phenomena of perniciousness during life. From the absence of post-mortem lesions which might explain death, particularly when it has surprised a person in good health, physicians conclude it to have been a case of pernicious fever; thus think the best practitioners of Rio de Janeiro.

The invariable lesions of pernicious fever—which

are only wanting when a single paroxysm has killed the patient in a few hours—are congestion of the liver and spleen. With us, as already said and demonstrated by cases, the former of these organs receives the influence of malaria with much more frequency and intensity than the latter, especially in the acute stage of the disease. Both during life from the very commencement of the disease, and after death where the paroxysms have been prolonged some days, the liver is much more compromised than the spleen. On autopsy the former is found enlarged, turgid with blood, of a very deep red color, very heavy, with its parenchyma very dense, compact, and hardened. In some of the gravest cases, where a violent paroxysm smites the system and extinguishes life, the flow of blood to the liver is so violent that the vessels are ruptured and a hæmorrhage occurs with its centre in the interior of the organ.—This fact, although reported by some foreign physicians, is still very rare, especially with us; I have never observed it, nor do I know that any colleague has done so.

The spleen is sometimes the seat of a more or less pronounced congestion, but it never attains the size it ordinarily presents in malarial cachexia, save when the pernicious paroxysm occurs after simple intermittent attacks of old date. There is one very common phenomenon in this organ observed in the majority of cases, even when it is not sensibly enlarged, namely, softening—friability of the splenic

pulp so that it breaks down easily under the slightest traction. Some pyretologists cite instances of hæmorrhagic effusions breaking down to a great extent the parenchyma of the spleen during a quickly fatal pernicious paroxysm. When I was a student of medicine, in 1858, I had occasion to observe a case of this sort in the woman's ward of Nossa Senhora de Conceição, where the Baron de Petropolis, my revered master and predecessor, was holding the official course in the last two months of the academic year.

According to the form assumed by the pernicious paroxysms, appear the various lesions revealed by autopsy. In the comatose, and especially in the cerebro-meningeal forms, hyperæmia of the brain and membranes is met with, more or less patent according to the intensity and duration of the disease; in the pneumonic form are noted the phenomena of pulmonary congestion or hepatization. In the other forms I have described, the necropsy almost always remains mute, excepting in the dysenteric, where may be manifest the intestinal changes proper to common dysentery.

The general rule in the pathological anatomy of pernicious fever is the existence of congestion of the liver, and at times of the spleen—great increase in the size of the former organ, diffuence and friability of the parenchyma of the latter,—and absence of any lesion in the other viscera, even in those which seem to suffer most during the paroxysms. This is what is



observed in Rio de Janeiro, and what I have often observed in the autopsy-room, which receives the bodies of patients dying in the hospital wards. From this negative element, springing from pathological anatomy, the physician derives great benefit in the post-mortem diagnosis.

In 1861 a negro slave was convalescent from a lymphatitis of the scrotum, in the Santa Izabel ward. The Baron de Petropolis was waiting for him to become stronger and discharge him, and had put him on the Agua Ingleza solely. One morning, at the visiting-hour, the illustrious Professor was told that the negro was dead; yet the evening before, he was walking about in the hospital corridors and in excellent condition. What could have been the cause of death? Was it rupture of an internal aneurism which had passed unnoticed? Was it a *foudroyant* stroke of apoplexy? Such were the conjectures made by the Professor, by myself (then holding the post of *chef de clinique*), by the interne, and by other students, surprised by the unexpected news. The autopsy was performed by me with all minuteness, aided by the two internes and two other distinguished pupils, in the presence of the Baron de Petropolis, and revealed nothing that could serve as a pretext, much less a cause, to explain death. Without any doubt, said the learned master to the pupils surrounding him, our patient died of a pernicious paroxysm. Later on a patient near him reported to us that he had com-

plained of being very cold at 10 o'clock at night, and had pulled up the blankets to cover himself without uttering another word.

## XXI.

The diagnosis of a pernicious fever is either very easy or extremely difficult. When the pernicious paroxysm is immediately preceded by simple intermittent paroxysms; when the physician knows that the patient resides or has been for some time in a marshy locality; when the persons about him can furnish minute and precise information; the diagnosis does not meet with the slightest difficulty. But if the patient be found alone, with intellectual faculties abolished or profoundly disturbed; if the practitioner be ignorant of his residence; if the pernicious attack has surprised him in the enjoyment of perfect health; and if the form assumed by the disease has many or some points of similarity to one of the affections known and classified in the nosological tables; the difficulties with which one strives in order to form an exact judgment of the nature of the disease, are of such an order that he will often wander from the path of truth, unless he calls to his aid all his perspicacity, attention, learning, and experience. It is in this difficult and harassing situation that the true practitioner is revealed in all the fullness of his real worth. He cannot adjourn his decision till later; he cannot wait for one symptom more; he cannot appeal to the further progress of the disease; he cannot set up a symptomatic treatment to cover up his responsibility and ease his conscience; but it is incumbent on him

to decide promptly, for any delay may be fatal to the patient; time presses, and must be availed of to the benefit of a life, often precious, which is about to be extinguished, and which may be disputed to advantage by the use of a certain remedy. This remedy will be administered immediately and with due energy if the diagnosis be fixed at once, and the patient may be saved; otherwise it will be set aside, and death will soon count one triumph more.

The diseases are rare of which the treatment is so directly deducible from the diagnosis as in pernicious fever; and they are very rare that show, like this, the value of medicine and the scientific importance of the physician. Under the influence of a pernicious attack a patient is to-day at the edge of the tomb; but after taking large doses of quinine he rapidly improves, to-morrow considers himself safe, and in a few days regains his former health.

If sometimes the physician cannot decide with certainty whether he has to combat a pernicious fever or another affection independent of malarial poisoning, and in this doubt employs the salts of quinine as a means of prudence and precaution, there are also cases where the diagnostic judgment ought to meet with no difficulty, especially with the practitioner in hot climates, in countries where malarial emanations prevail, or in cities like Rio de Janeiro where pernicious fevers are so common and assume the most varied forms.

According to some old authors, among them Torti, three signs characterize a pernicious paroxysm: *first*, the condition of the pulse, which expresses the condition of the radical forces of the system; *second*, the condition of the urine; *third*, the paroxysmal succession of the symptoms. In the actual state of practical medicine these three signs have completely lost the importance assigned them, and we should greatly err in the diagnosis of a pernicious attack had we no other sources of instruction.

As everyone knows, it is not always that the condition of the pulse betrays the condition of the forces of the animal economy, especially at the beginning of a disease. Clinical observation protests daily against the exaggerated opinion of Torti, who asserts that the pulse in pernicious fevers is always weak; small, and compressible, except in paroxysms of comatose form, when it is bounding, hard, and full.

Still less than the state of the pulse can the condition of the urine serve as a diagnostic-sign of pernicious fever. Even setting aside the cases—very frequent, however—where during the pernicious attack there is a suppression of urine, the presence in the fluid of abundant reddish sediment, far from deserving importance as the ancients thought, has been observed in many acute febrile diseases, especially after the frequency of pulse has ceased and the temperature has become normal; the amount of sediment is usually in direct proportion to the duration and intensity of

the fever. Genuine ashes of organic combustion, the phosphates, urates and chlorides of which the reddish urinary sediment is in great part composed, indicate nothing more than the greater or less degree of interstitial disintegration of tissue during the febrile paroxysm, whatever may have been its nature, simple or pernicious, idiopathic or symptomatic.

As to the third sign of Torti—the periodicity of the phenomena,—although it may merit great importance in the diagnosis of a pernicious attack, it is not always present, since, as is generally known, pernicious fever assumes sometimes the remittent and at others the continued type.

In difficult cases, given the unfavorable circumstances I have pointed out, the physician, after well examining his patient, will find in him five signs to indicate that it is a pernicious paroxysm. These signs, the first four of which I presented to my pupils in 1867, and which were published, together with a lecture I gave on pernicious fever, in No. 1 of the *Revista do Atheneo Medico*, are very rarely lacking—at least the majority of them; they are the following:

First: The rapidity with which the symptoms develop and acquire their maximum intensity.

Second: The singular want of harmony noted in the symptoms, the unusual manner of their grouping, such that they can be referred to no fixed disease.

Third: The gravity of the symptom or symptoms denoting perniciousness.



Fourth: The rapid enlargement of the liver, and sometimes of the spleen as well.

Fifth: The splenic pain, really a splenalgia, which appears independent of the enlargement of the spleen, and is revealed when the left hypochondrium is compressed beneath the last rib.—This last sign was not appreciated by me until after Dr. Duboué had called the attention of the readers of his book upon malaria to it.

Of all these signs, the first, second and fourth are the most constant and important; the fifth is often wanting, but when it appears is also of great value.

Whenever the slightest doubt arises in the physician's mind of the existence of a pernicious paroxysm, he ought to prescribe for the patient a full dose of quinine, inasmuch as it is to be preferred that this drug should be useless, or even a little harmful, in case it is not indicated, rather than that it should fail to be employed in a case of pernicious fever.—On the first hypothesis, no serious inconvenience will be caused by the practitioner's over-caution; in the second, the patient's death will be the result of his neglect. In the benefit obtained in a short time from the salts of quinine, the physician will furthermore find an element of diagnosis not to be despised. Encouraged by these advantages, and more assured in his judgment, he will pursue the same treatment, and avoid with the greatest care the recurrence of the paroxysm; if he has ill success, if the progress of the

disease convinces him of the uselessness or harmfulness of the treatment he employs, he will always have time to change his course and correct any inconvenience it may have chanced to give rise to.

## XXII.

Pernicious fever is always a very grave affection; the algid, cardialgic, choleraic, syncopal, and comatose forms are those which assume the highest gravity. The greater the number of simple intermittent attacks preceding a pernicious one, the graver becomes this latter; when, especially, these simple paroxysms have been rebellious to the salts of quinine, we should suspect that the specific treatment will be fruitless to combat the pernicious paroxysm also, and to prevent the next attack, which, if at times it fails to be fatal, is always very serious.

The salts of quinine fail to produce the desired effect in cases where the malarial poison has struck deep root in the system; and then we either see simple periodical paroxysms last a long time, and only disappear on the patients changing their climate, as is frequently observed; or, if the paroxysms are pernicious, they recur, and the sufferers die in the second or third. The prognosis of pernicious fever should then be so much the graver as the number of paroxysms is larger, the longer the patient is from his first one, and the greater the doses of quinine employed with no benefit.

## XXIII.

In the treatment of pernicious fever, the physician should attend at once to the basis and to the form of the disease. In presence of a paroxysm, he should employ all the means within his reach to prevent the following paroxysm or to modify its gravity. It is incumbent on him to lose no time and to work vigorously; the patient's life depends on the promptness and energy of the treatment; the smallest delay, and weak medication, are always prejudicial.

The only means that can efficiently combat the basis of the disease are the salts of quinine, given without loss of time and under such circumstances as to be promptly absorbed. There are cases in which the physician recoils a little to advance further; he resorts to certain preliminary means, which remove the causes generally recognized as obstacles to the absorption of the salts of quinine, and then he employs these salts afterwards.

What has been said in relation to other pyrexias is entirely applicable to pernicious fever. To disengage a very congested viscus, whether it be the brain, lung, or liver; to unload the alimentary canal, overloaded with mucus, bile, or alimentary residua; to abate the exaggerated febrile heat; to promote some perspiration when the skin is very hot and dry—such are often, if not always, the indications which should be previously fulfilled, for on these depends the effi-

ciency of the principal treatment, the prompt absorption of the salts of quinine. Still there are cases so urgent, so imminent, which threaten life so seriously, which may terminate fatally in a few hours, that not a moment can be or should be lost.

To give quinine in solution; to give it in doses thrice larger than in a simple fever; to administer these large doses at various hours of the day; not to wait for apyrexia nor any other occasion after fulfilling the preliminary indications,—are precepts which I invariably follow in the treatment of pernicious fever, so far as possible. In the gravest cases, where it has been little used, it is best rather to sin by prodigality than by parsimony in the doses of the remedy, for it is impossible to know what is a sufficient dose to combat the miasmatic infection and prevent the next paroxysm. No serious result can come from our prodigality—the gravest symptoms of cinchonism yield in a few days to alcoholics, diffusible stimulants, and opium; while on the other hand the patient's death may be the consequence of our parsimony. It is for this reason that, whenever I meet with a case of the highest gravity, I do not hesitate to saturate the patient with quinine, even to poison him with this substance, that the therapeutic poisoning, which can be easily cured, may replace in the system the malarial poisoning which may kill in a few hours. Of this mode of procedure of mine, and of the benefits I have obtained with it, some of the cases which figure in this

paper give very significant proofs. The patient who had an aphasic pernicious attack, and who was in the hospital wards in 1867, to whom I have already referred, took in five days 198 grains of quinine (12 grammes) without having had any accident, excepting some deafness which lasted hardly a week. At the time of my taking up this case in a lecture, which was published, as already stated, I referred the students to a case in my private practice, where a girl of nine or ten years, residing in the Rua do Bom Jardim, attacked by a second comatose pernicious paroxysm, took during a week 204 grains of quinine in decreasing doses (little less than thirteen grammes); deafness resulted which lasted two months.

In my *Anuario de Clinica* of 1868, is reported the case of a patient in the Santa Izabel ward, who, having had three progressively graver comatose pernicious attacks, took in twelve hours a mixture containing 8 grammes of quinine. These three patients, who took the largest doses of quinine I have ever given, recovered completely; the same happened with the nephew of Drs. Sebastian Saldanha da Gama and Benjamin Franklin Ramiz Galvao, the abstract of whose case figures in this work and should be added to the three I have just spoken of.

I am accustomed to give two or three grammes of quinine in two or three doses, dissolved by means of a few drops of sulphuric acid, leaving three hours' interval between the doses. Sometimes I give one



gramme of the remedy as soon as the patient is in a condition to absorb it, and order repeated a mixture containing 2 grammes, to be given hourly in tablespoonful doses, so that the mixture shall be exhausted within the space of twelve hours. My aim is to keep the patient's system under the influence of the drug, even after the dynamic action of the first dose has been exhausted. In cases of maximum gravity, where all is anarchy in the animal economy, where we cannot trust much to the activity of the agents of absorption since all the organic functions tend towards annihilation, I use all the ways of administration of remedies, to give by them the salts of quinine. Injections in the rectum, repeated frictions, the endermic method, even the hypodermatic, are made use of by me to saturate the patient with quinine. I resort to the valerianate of quinine alone, only under the two following circumstances: first, when I am convinced that the sulphate is of no avail; second, when the paroxysm is accompanied by great prostration of strength, by profound adynamia, revealed by the smallness, softness and concentration of the pulse, cooling of the extremities, and weakness of the heart's impulse. Even in this second case I frequently make use of the sulphate of quinine in combination with alcoholic and diffusible general stimulants, either in the same, or distinct prescriptions given alternately at short intervals. This is my procedure when pernicious fever assumes the

algid, sudoral, choleraic, syncopal, and ataxo-adyamic forms.

The formulæ to which I give preference in these cases appear in detail in the observations met with in this paper. I differ in opinion from those who believe it preferable, during an algid paroxysm, to first re-establish calorification, excite the circulation, and thus promote reaction, in order afterwards to resort to the salts of quinine. Whoever knows the gravity of algid paroxysms, who has been a close observer of the imminent peril threatening the patient during them, cannot be of this opinion.

There is no doubt that quinine in large doses is a great hyposthenic, a powerful depressant of innervation; no one disputes that among the grave phenomena of cinchonism figure prostration of strength, cooling of the extremities, profuse diaphoresis, slowness and smallness of the pulse and weakness of cardiac contraction, faintness, vertigo, and even syncope; but it must be considered that in the algid, diaphoretic, choleraic, and syncopal forms, their characteristic symptoms are produced by a malarial poisoning, that the salts of quinine neutralize this poison, that they operate in this case as an antidote, and, the cause being removed, its effects should disappear. And, moreover, if the sulphate of quinine inspires suspicion to the timid, they may resort to the valerianate; the excitant properties of valerianic acid on the nervous system correct the depressant action of the

quinine which plays the part of base in this saline combination. The sulphate of quinine itself, when combined with opium, ether, canella, valerian, the ammoniacal preparations, musk, and alcoholics, does not produce the hyposthenic effects that customarily follow when given alone and in large doses.

As regards the therapeutic means demanded by the form of the pernicious fever, they vary much, as already stated in the beginning of this section. General blood-letting is rarely indicated; even in the paroxysms of comatose and cerebro-meningeal form, where effusion within the skull is at times very manifest, phlebotomy should be employed with much reserve and caution; the physician should never be unmindful of the tendency of the system, in cases of pernicious fever, to fall into collapse—genuine adynamia. In the older works, especially in those of André, Chomel, Rostan, and Bouillaud, written under the influence of Broussais' doctrines, we meet with many cases of pernicious fever, then differently defined, in which death occurred a short time after the first or second bleeding. In the highly commendable work of Dr. Dutrouleau, where malarial diseases are well studied, some cases of pernicious fever with very marked cerebral symptoms figure, in which the lancet gave bad results.

Throughout my professional life I have bled barely two patients with pernicious fever, and in both cases very successfully; consequently, I do not abso-

lutely proscribe phlebotomy; there are cases where bleeding is the only means of relieving promptly the congestion of an important viscus, the brain or the lung, which during the paroxysm was the seat of a severe congestion threatening immediate death. If in this supposed case the subject be young, strong, of good constitution, if the pulse be full, hard, and bounding, he will certainly find his salvation in the lancet and in quinine—and without the employment of the former, the latter will avail him nothing; but these conditions are seldom present with us in practice, and therefore general bleeding should be reserved for very special cases. Almost all the physicians of Rio de Janeiro are of this opinion; the Baron de Lavradio, whose long experience and celebrity give him great authority in questions of national practice, declared at a session of the Imperial Academy of Medicine that he was very suspicious of bleeding a patient with pernicious fever, even when evident signs of severe congestion of the brain were manifest. The same opinion was maintained and followed by the Baron de Petropolis in the last ten years of his professorship. Professor Dias da Cruz, who has great scientific attainments and an extensive practice, thinks the same.

Local blood-letting by means of leeches and wet cups is, on the other hand, frequently indicated; it figures in some of the cases published in this paper. In the comatose form, in the cerebro-meningeal, deli-

rious, ardent, pneumonic, hæmoptoic, the physician often needs to prescribe leeches to the verge of the anus, in order to unload the meninges, brain, or lung. When the pernicious paroxysm, whatever be its form, excepting the algid group, is accompanied by great congestion of the liver, leeches to the anus and wet cups to the hypochondrium are of great use. The number of leeches and cups depends upon the patient's conditions of age, temperament, constitution, and robustness, or the strength and fullness of the pulse, date of disease, etc. I have observed some cases of pernicious fever in which the sulphate of quinine, of no avail before blood-letting, was promptly absorbed after the use of a few leeches, and the patient at once sensibly improved.

Purgative medication, represented by emetics and cathartics, in the immense majority of cases of pernicious fever is of recognized benefit. When the bilious element is mingled with the symptoms of the paroxysm, an emetic of ipecac is frequently the indispensable condition of the efficacy of the salts of quinine. At the beginning of an attack, when the febrile reaction is well marked, and the tongue denotes derangement of the *prima viæ*, I am accustomed to add tartar emetic to the ipecac, and this combination has given me good results. The saline cathartics, and in certain cases calomel, in the dose of 6 decigrammes to 1 gramme, lend valuable aid at various stages of the disease; calomel, especially, given at the commence-

ment, produces a very prompt salutary effect when there is hyperæmia of the intracranial vessels, as commonly occurs in the comatose, cerebro-meningeal, delirious, and ardent forms. Irritant purgative enemata are very beneficial, chiefly in cases where it is impossible to administer remedies by the mouth, either because there is complete and profound coma (carotic or apoplectic form) or on account of uncontrollable trismus or dysphagia.

Diffusible stimulants and alcoholics, to combat algidity in paroxysms of algid form; cerebral depressants, like belladonna, hyoscyamus, and laurel-water, to lower cerebral excitement in paroxysms of cerebro-meningeal, delirious, and convulsive form; calmatives and antispasmodics—especially opium and its alkaloids, bromide of potassium, and chloral—to correct the nervous symptoms noted in paroxysms of neuralgic, tetanic, epileptic, and asthmatic forms; anticalorics, such as digitalis, tincture of veratrum, tincture of *Eucalyptus globulus*, tincture of caferana,\* to lower the very high temperature in the paroxysm of ardent form; and many other therapeutic resources indicated by the various shapes which the paroxysms assume, are the auxiliary means employed by the physicians of Rio de Janeiro in the treatment of pernicious fever, and which lend them indisputable service.

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\* Caferana or Jacaré-artú (*Tachia Guianensis*), tonic and febrifuge.



From the reading of the cases figuring in this paper, it may be deduced that I almost always use blisters to the lower extremities in cases of pernicious fever. In fact, this practice, which I have followed since I began to practice medicine, has given me such good results that I shall probably not abandon it to the end of my life. In paroxysms where the cerebral centres are compromised, the derivative effect of blisters, besides being immediately beneficial, is felt after they are dressed. I wonder that there are Brazilian physicians, to whose practical and scientific merit all render homage, who dispute the immense advantage of this therapeutic method.

The formulæ I am accustomed to employ in the various instances of pernicious fever, as auxiliary to the quinine treatment, appear in the cases, where many of them are found *in extenso*; therefore I do not repeat them here.

Let me say once again, in finishing this section, that the physician, in presence of a patient attacked by a grave paroxysm, has no time to lose; he should strive solely to correct as speedily as possible the intensity of the symptoms constituting the perniciousness, and prevent the appearance of the following paroxysm, or at least modify its gravity; treatment should be prompt and energetic! On this energy and promptitude essentially depends, I repeat, the salvation of the patient confided to his care.















